EPSON®

User's Guide

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Important Safety Instructions

Read all of these instructions and save them for later reference. Follow all warnings and instructions marked on the computer.

- Unplug the computer before cleaning. Clean with a damp cloth only. Do not spill liquid on the computer.
- Do not place the computer on an unstable surface or near a radiator or heat register.
- Do not block or cover the openings in the computer's cabinet. Do not insert objects through the slots.
- Use only the type of power source indicated on the computer's label.
- Connect all equipment to properly grounded power outlets. Avoid using outlets on the same circuit as photocopiers or air control systems that regularly switch on and off.
- Do not let the computer's power cord become damaged or frayed.
- If you use an extension cord with the computer, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure the total of all devices plugged into the wall outlet does not exceed 15 amperes.
- Except as specifically explained in this *User's Guide*, do not attempt to service the computer yourself.
- Unplug the computer and refer servicing to qualified service personnel under the following conditions:

  If the power cord or plug is damaged; if liquid has entered the computer; if the computer has been dropped or the cabinet damaged; if the computer does not operate normally or exhibits a distinct change in performance. Adjust only those controls that are covered by the operating instructions.
- If you plan to use the computer in Germany, observe the following:

  To provide adequate short-circuit protection and over-current protection for this computer, the building installation must be protected by a 16 Amp circuit breaker.

  Beim Anschluß des Computers an die Netzversorgung muß sichergestellt werden, daß die Gebäudeinstallation mit einem 16 A Überstromschutzschalter abgesichert ist.

Importances instructions de sécurité

Lire attentivement les instructions suivantes et les conserver pour les consulter en cas de besoin. Observer soigneusement tous les avertissements et directives marqués sur l'ordinateur.

- Débrancher l'ordinateur avant de le nettoyer. N'utiliser qu'un chiffon humide. Veiller à ne pas renverser de liquides sur l'appareil.
- Ne pas placer l'ordinateur sur une surface instable ni près d'une source de chaleur.
- Ne pas bloquer ni couvrir les orifices d'aération de l'appareil. Ne pas introduire d'objets dans les overtures.
- Utiliser seulement le type de source d'alimentation électrique indiqué sur l'étiquette.
- Tout l'équipement doit être branché sur des prises de courant avec contact de terre. Ne jamais utiliser une prise sur le même circuit qu'un appareil à photocopies ou un système de contrô1e de ventilation avec commutation marche-arrêt automatique.
- S'assurer que le cordon d'alimentation de l'ordinateur n'est pas abîmé ni effiloché.
- Dans le cas où on utilise un cordon de rallonge avec l'ordinateur, s'assurer que l'intensité en amperes requise pour tous les appareils branches sur ce cordon ne soit pas supérieure à la capacité du cordon. S'assurer aussi que cette intensté ne dépasse jamais la somme de 15 amperes pour l'ensemble des appareils.
- Sauf clans les cas spécifiques expliqués dans ce manuel de l'usager, ne pas essayer d'entretenir ou de réparer l'ordinateur soi-même.
- Débrancher l'ordinateur et contacter un technician qualifié dans les circonstances suivantes:

  Si le cordon ou la prise sent abîmés; si un liquide a pénétré à l'intérieur de l'appareil; si on a laissé tomber l'appareil ou si le boîtier est endommagé; si l'ordinateur ne fonctionne pas normalement ou fonctionne d'une manière très difference de l'ordinaire. N 'ajuster que les commandes décrites dans les directives.
- Pour utiliser l'ordinateur en Allemagne, il est nécessaire que le bâtiment soit muni d'un disjoncteur de 16 ampères pour protéger l'ordinateur contre les courts-circuits et le survoltage.

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EPSON International Marketing Locations

Introduction

Your new EPSON® computer is a versatile system ideally suited for use as a network server or high-powered workstation.

With the computer's Intel® Pentium™ microprocessor and 8MB of standard memory you can run a vast array of the latest programs, utilities, and games designed for productivity and fun.

Your high-capacity hard disk drive will hold the hundreds of program and data files you will create as you use your computer.

And when you 're ready to acquire more capability, you can expand your system, video, and cache memory and install options cards. The VESA option slots allow you to install high-perform ante VESA-compliant devices such as a graphics accelerator card, SCSI adapter, or network controller.

Computer Features

Your computer offers the following features:

- ☐ Intel Pentium 60 or 66 MHz microprocessor
- ☐ 8MB of internal memory, expandable to 128MB
- ☐ High-speed, 32-bit local bus interfaces for both SVGA video and IDE hard disk drives
- ☐ Two-channel VESA local bus IDE hard disk drive interface supporting up to four IDE hard disk drives (two on each channel)

- 16KB of internal cache in the microprocessor and 256KB of external cache on the main system board, upgradable to 1MB

- 1MB of onboard video memory, expandable to 2MB

- Energy Star compliant, low-power standby mode for the video and hard disk drive in standard configurations

- Built-in SVGA port with support for energy-conserving monitors

- Three 16-bit, ISA option slots and two 32-bit VESA local bus slots (VESA slots can also be used for ISA cards)

- Space for up to four mass storage devices, three externally accessible and one internal; on-board controllers support up to four IDE hard disk drives and two diskette drives.

Your system contains local bus interfaces for the video and IDE hard disk drive controllers. These buses can transfer data at the full speed of your processor (60 or 66 MHz) rather than at the standard 8.33 MHz ISA bus speed, so your system can access the hard disk drive and process video data far more quickly.

Power-saving Features

In standard configurations, this computer complies with the United States Environment al Protection Agency's Energy Star Program, which promotes the manufacture of energy-efficient printers, computers, and monitors. Your computer's "Green PC" feature places the hard disk drive in a low-power standby mode when the mouse and keyboard have been inactive for a specified period of time.

Note
If you have an Energy Star compliant monitor, it also enters a low-power standby mode because it isn't receiving video signals from your computer. (Screens on non-compliant monitors go blank, but do not enter a low-power standby mode.)

SVGA and IDE Drivers

Your computer comes with special SVGA and IDE drivers for the integrated local bus SVGA and IDE hard disk drive interfaces. The IDE driver lets you use the high-speed, 32-bit local bus IDE hard disk drive interface which dram atically increases the speed of your computer as it reads from and writes to your hard disk drive.

The SVGA drivers allow you to take advantage of the local bus and extended VGA features such as high resolutions and 132-column text mode when you run popular application programs.

See Chapter 2 for instructions on installing the IDE and video drivers.

How to Use This Manual

This manual contains the information you need to get the best results from your computer. You don't have to read everything in this book; see the following chapter summaries to find the sections you need.

Chapter 1 provides instructions for setting up your system and connecting peripheral devices such as the monitor and printer.

Chapter 2 describes how to run the SETUP program to define your computer's configuration. This chapter also describes how to install the IDE and video drivers that allow you to take full advantage of your computer's capabilities.

Chapter 3 covers general operating procedures, such as resetting the computer, using the password, and changing the processor speed.

Chapter 4 describes how to remove and replace the computer's cover, change jumper settings, and install optional equipment such as option cards and memory modules.

Chapter 5 explains how to install and remove disk drives

Chapter 6 contains troubleshooting tips.

Appendix A lists the specifications of your computer and the operating environments that have been tested on your system.

At the end of this manual you'll find a **Glossary,** an **Index,** and a list of EPSON U.S. and international marketing locations.

Where to Get Help

If you purchased your computer in the United States or Canada, EPSON provides customer support and service through a network of Authorized EPSON Customer Care Centers. EPSON also provides support services through the EPSON Connection.[SM] In the United States, dial (800) 922-8911. In Canada, dial (800) **GO-EPSON.**

Call the EPSON Connection for the following:

- ☐ Technical assistance with the installation, configuration, and operation of EPSON products
- ☐ Assistance in locating your nearest Authorized EPSON Reseller or Service Center
- ☐ Customer relations
- ☐ EPSON technical inform ation library fax service
- ☐ Product literature on current and new products.

You can purchase accessories, manuals, or parts for EPSON products from EPSON Accessories at (800) 873-7766 (U.S. sales only). In Canada, call (800) **GO-EPSON.**

When you call for technical assistance, be ready to identify your system and its configuration, and provide any error messages to the support staff. See Chapter 6 for more inform ation.

If you purchased your computer outside the United States or Canada, contact your EPSON dealer or the marketing location nearest you for customer support and service. International marketing locations are listed at the end of this manual.

If you need help with any software application program you are using, see the documentation that came with that program for technical support inform ation.

CompuServe On-line Support

If you have a modem, the fastest way to access helpful tips, specifications, drivers, application notes, tables for DIP switch or jumper settings, and bulletins for EPSON products is through the Epson America Forum on Com pu Serve.®

If you are not currently a member of CompuServe, you are eligible for a free introductory membership as an owner of an EPSON product. This membership entitles you to:

- ☐ An introductory $15 credit on CompuServe
- ☐ Your own user ID and password
- ☐ A complimentary subscription to *CompuServe Magazine,* CompuServe's monthly publication.

To take advantage of this offer, call (800) 848-8199 in the United States and Canada and ask for representative #529. In other countries, call the following U.S. telephone number: (614) 529-1611, or your local CompuServe access number.

If you are already a CompuServe member, simply type **GO EPSON** at the menu prompt to reach the Epson America Forum.

Chapter 1

Setting Up Your System

This chapter briefly describes how to setup your computer. It includes the following information:

- Choosing a location
- Setting the voltage selector switch
- Connecting system components
- Turning the computer on and off.

Choosing a Location

Before you set up your system, choose a convenient location that provides a flat, hard surface. Do not place your system too close to any electrical device, such as a telephone or television, which generates an electromagnetic field. Protect your computer from extremes in temperature, humidity, dust, and smoke, and avoid direct sunlight or other sources of heat.

Read the "Important Safety Instructions" on page iii at the front of this manual for more instructions on choosing a suitable environment for your system.

Also read "Working Comfortably" in Chapter 3 for guidelines on creating a comfortable and safe working environment.

Setting the Voltage Selector Switch

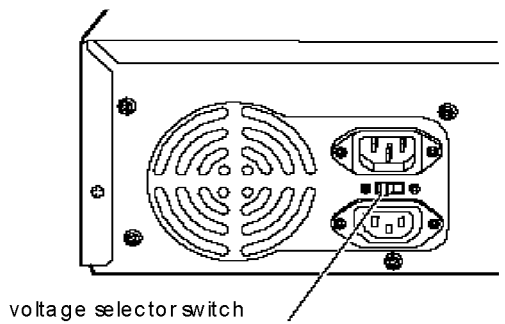
Your system is powered by a 200 Watt power supply. The power supply input voltage is controlled by a switch on the computer's back panel that may be set to 110 VAC or 220 VAC. (The switch on your computer may read 115 VAC or 230 VAC; these are equivalent settings.)

The computer is shipped with the voltage selector switch set to 110 VAC, which is appropriate for line source voltages between 100 and 120 VAC. This is generally the correct setting if you use the computer in North America, South America, or Japan.

If you plan to operate the computer in the United Kingdom, Europe, or some South American countries, you will almost certainly need to reset the voltage selector switch to 220 VAC. Line source voltages between 200 and 240 VAC are acceptable with the switch set to 220 VAC.

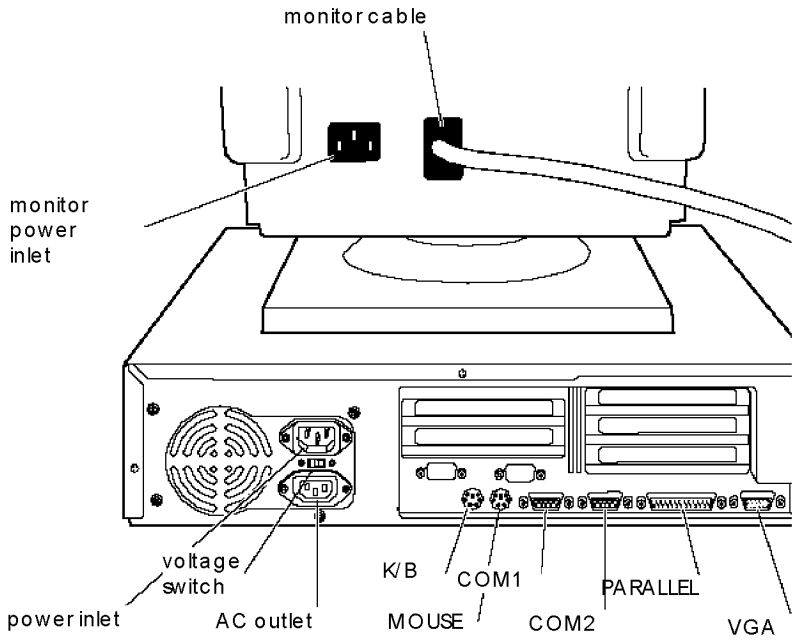
Caution
Before you turn on the power to your system make sure the voltage selector is set to the appropriate setting for the electrical power source in your location or you will seriously damage your system.

To change the voltage selector switch setting, slide the switch to the left to select 110 VAC or to the right to select 220 VAC.



Connecting System Components

Use the illustration below to locate the ports on the back of your system as you connect the keyboard, monitor, printer, and other devices.



Your system also includes two removable panels above the mouse and keyboard ports. You can remove these panels if you want to install a game port connector to the game port interface on the system board or if you install an optional external port.

> **Note**
> To use the game port connector on the main system board, be sure jumper JP9 is set to enable the port (default setting), as described in Chapter 4.

Connecting a Keyboard or Mouse

To connect a keyboard, hold the cable connector so the arrow on the connector faces up. Insert it into the port marked **K/B.**

If you have a PS/ 2 compatible mouse, connect it to the computer's built-in mouse port by inserting the connector into the port marked **MOUSE**

> **Caution**
> Although the connectors and ports for the mouse and keyboard are physically identical, they cannot be used interchangeably. Be sure to plug the connectors into the appropriate ports, or you may damage your system.

If your system has not already been configured, you may need to install a mouse driver. See your mouse manual for instructions. (If you are using Window, ™the Windows installation program automatically loads a mouse driver for Windows applications.)

Connecting a Monitor

You can connect your VGA or SVGA monitor to the computer's built-in VGA port as described below:

1. Place your monitor near the computer. Turn the monitor and computer around so the backs are facing you.

2. There should be two cables provided with your monitor: the monitor cable (to connect it to the computer) and the power cable (to connect it to the power source). On most monitors, the monitor cable is permanently attached to the monitor. If your monitor does not have an attached cable, connect the cable to it now.

3. Examine the connector on the monitor cable and line it up with the VGA port on the computer. Then insert the connector into the port.

> **Caution**
> To avoid damaging the connector, be careful not to bend the pins when you insert it.

4. If the connector has retaining screws, tighten them.

> **Caution**
> Before you plug the monitor's power cord into the back of your computer, make sure the monitor's power requirements do not exceed 1 Amp.

5. Plug the monitor's power cord into the power inlet on the back of the monitor.

6. Plug the other end of the power cord into a grounded electrical outlet or into the power outlet on the back of the computer.

Connecting a Parallel or Serial Device

Your computer has one multi-mode parallel port and two serial ports. To connect a printer or other peripheral device, follow the appropriate instructions in this section.

Using the parallel port

Follow these steps to connect a parallel device to your computer:

1. Place the parallel device and the computer so that the backs are facing you.

2. Align the connector end of the parallel cable with the PARALLEL port and plug it in. If the connector has retaining screws, tighten them.

3. Connect the other end of the cable to the parallel device. To secure the cable, squeeze the clips at each side of the device port and push them into place.

4. Plug the parallel device's power cord into a grounded electrical outlet.

Be sure to set the multi-mode parallel port to the correct mode for the device you connected by changing the setting of the **LPT Extended Mode** option in the SETUP program, as described in Chapter 2.

If you use EPP mode (Enhanced Parallel Port) or ECP mode (Extended Capabilities Port), check your parallel device software documentation for the correct DMA channel (DRQ) setting. Then set jumpers JP17 and JP18 to match this setting, as described in Chapter 4.

Using the serial ports

If you have a printer, a modem, or other device with a serial interface, you can connect it to one of the serial (RS-232C) ports. Make sure you have a cable compatible with a DB-9P connector.

To connect a serial device, insert the connector into one of the ports marked COM1 and COM2. If you are connecting only one serial device, use the COM1 port.

Connecting the Power Cord

Follow these steps to connect the computer's power cord:

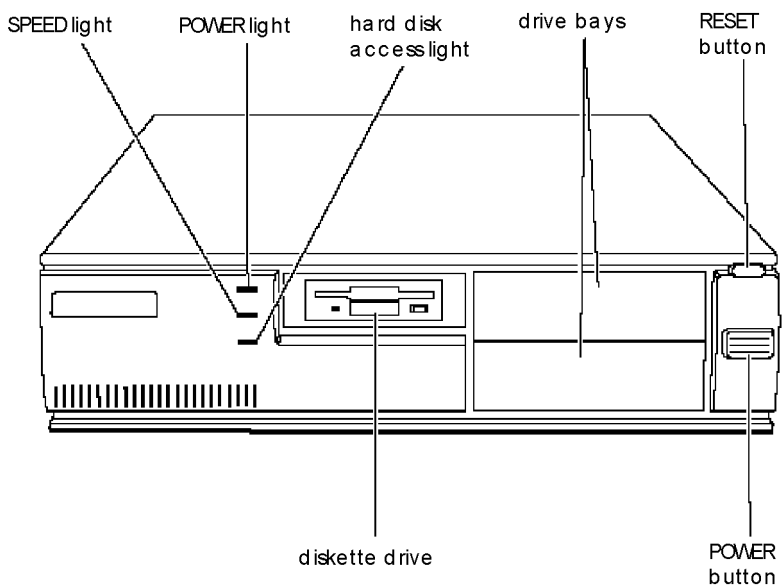
1. Plug the power cord into the power inlet on the back of the computer.

> WARNING
> To avoid an electric shock, be sure to plug the cord into the computer before plugging it into the wall outlet.

2. Plug the other end of the cord into an electrical outlet.

Turning On the Computer

Once you set up your system, you 're ready to turn on the power. The features on the front panel are shown below.



Caution
Before you turn on your computer, be sure to read "Important Safety Instructions" on page iii at the front of this manual to ensure that you have created a safe environment for your system.

Follow these steps to turn on your system:

1. If there is a protective card in a diskette drive, remove it.

2. Turn on the monitor, printer, and any other devices connected to the computer.

3. If you do not have a hard disk with an operating system loaded on it, insert your main operating system diskette in drive A.

4. Turn on the computer by pressing the power button on the right side of the front panel.

   The power indicator lights up; then the computer performs its power-on diagnostics, which are a series of checks to make sure everything is working correctly.

   During diagnostics, you see a message telling you to press Del to run the SETUP program. (Chapter 2 describes starting and using SETUP.)

5. If your system is configured to automatically load a program (such as Windows), you then see the first menu or screen display of that program. If not, you may see the operating system prompt, such as C: \> or A: \>.

   If there is no operating system installed on your computer, you may see an error message. Ignore the message for now; once you install the operating system, you will not see this message.

Now you need to run the SETUP program to make sure your computer is configured properly. First turn off the computer, as described below, then see Chapter 2 for instructions. When you finish running SETUP, see "Post-SETUP Procedures" on page 2-15 for guidelines on what to do next.

Turning Off the Computer

Whenever you turn off your system, follow these steps:

1. Save your data, exit any application programs, and exit Windows, if you are running it.

2. Check the hard disk drive light and the diskette drive light(s) to make sure they are not on. Don't turn off the computer if one of these lights are on because you could damage the drive or lose data.

3. Remove any diskette(s) from the diskette drive(s),

4. Press the power button to turn off the computer.

5. Turn off the monitor, printer, and any other peripheral devices.

Chapter 2

Running SETUP and Installing Drivers

Your computer has a configuration program, SETUP, contained within the BIOS chip on the system board. This program allows you to change the settings for your hardware configuration.

The computer also comes with diskettes containing drivers and utilities that let you take advantage of some of the advanced features of your system, like the local bus hard disk drive interface and the local bus SVGA capabilities of the built-in video interface.

This chapter describes using SETUP and provides instructions for installing the local bus IDE drivers and video drivers.

Using SETUP

You may need to run the SETUP program the first time you use your computer. If your system came unconfigured, you need to define how it is set up. If your system was configured for you, you may want to check the settings or adjust the date and time. You also may need to run SETUP again later if you change your configuration.

SETUP lets you verify or change the following:

- ☐ System settings such as date, time, diskette drives, and type of video display
- ☐ Automatic or manual selection of hard disk drives
- ☐ Automatic or manual selection of advanced hardware features for optimizing system perform ante
- ☐ System booting options

- Security password and anti-virus features
- Green PC options, such as the time intervals before the system and the hard disk drive go into low-power standby mode.

The SETUP program and the factory default options for your computer are stored in the computer's ROM (read-only memory). The configuration information you enter is backed up by a battery, so it is not erased when you turn off or reset the computer.

Starting the SETUP Program

When you start your computer, it performs some power-on diagnostics. During these diagnostics, you may see the following message:

```
Press <Del> to enter SETUP
```

Press **Del.** This message is only on the screen for a few seconds. If you missed it, restart your computer and try again.

If, during power-on diagnostics, the system detects an error in your system configuration, you hear two beeps and see an error message followed by this message:

```
Press <F1> to resume, <Del> to run SETUP
```

Press **Del** to run SETUP and correct the problem

SETUP displays the Main Menu, which allows you to select various options to identify your system's configuration and then save your new values. You can also cancel any changes you have made and restore the default values stored in ROM or load the previously stored values.

The table below lists the keys you can use to perform SETUP operations.

SETUP function keys

Key	Function
↑↓← →	Move the cursor to the next or previous modifiable option
Home or End	Move the cursor to the top or bottom of the menu
F1 or Alt H	Display a help screen describing the option currently selected
PgDn or–	Select the previous value
PgUp or+or Spacebar	Select the next value
F9	Supplies the factory default values for the SETUP options on the current screen
F10	Ignoresany changes you have made on the current screen
Enter	Selects the current option or value
Esc or Alt X	Return to the previous screen

While you are in SETUP, the bottom of the screen lists the keys you can press to perform specific functions.

Using the System Setup Option

When you select the System Setup option, you see the System Setup screen. From this screen, you can set the system time and date, define your video display type, check system memory, and define the diskette drives.

Move the cursor to the value you want to change. Then increase or decrease the value until you see the one you want.

Setting the time and date

The real-time clock in your computer continuously tracks the date and time—even when the computer is turned off. Once you set the System Time and System Date options, you should not need to change them, unless you adjust the time for daylight savings or a different time zone. (The computer automatically changes the date for leap years.)

Setting the video display type

The Video System option allows you to define the type of display you are using. If you have connected a VGA or SVGA monitor to the computer's built-in VGA port, select EGA/VGA.

If you connected a monitor that doesn't support VGA to a video adapter card installed in your system, select either the CGA 80X25 or the Monochrome option. If you installed a video adapter card, make sure you disable the on-board SVGA controller by setting jumpers JP31, JP32, and JP33 to the Off position. (See Chapter 4 for information on setting jumpers.)

Checking system memory

When you boot your system, the system BIOS updates the memory size automatically. You see the memory configuration displayed in the System Memory and Extended Memory fields on this SETUP screen.

You cannot change these values; if they are not what you expect them to be, check that the SIMM(s) are securely seated in their sockets, as described in Chapter 4.

Setting the diskette drive(s)

On your system, diskette drive A is the 3.5-inch, high-density drive installed in the computer. You may also have another drive of a different size or capacity; this is drive B. Check the settings for both drives and correct them if necessary.

Using the Fixed Disk Setup Option

The Fixed Disk Setup option defines the types of hard disk drives you have installed in your system. When you select this option, you see the Fixed Disk Setup screen. From this screen, select Fixed Disk 0 Control (Boot Drive) or fixed disk 1 through fixed disk 3 options to configure from one to four drives. (Fixed disks 0 and 1 are the drives connected to your primary IDE hard disk drive interface; fixed disks 2 and 3 are connected to the secondary hard disk drive interface.)

If any of the drives you installed are larger than 528 MB, make sure the Large Disk DOS Compatibility option is set to Enabled (the default setting).

Your computer comes with a hard disk auto-sensing feature. Press **Enter** when the `Autotype Fixed Disk` option is highlighted. The system detects the type of hard disk drive and fills in the remaining fields on the screen.

Some drives, such as preform atted drives, may not support the auto-sensing feature. If the drive parameters sensed by the computer do not match your drive, check Appendix A to see if your drive's parameters are included in the hard disk drive table. If not, you need to define your own drive type or reformat the disk. See the next section for instructions on defining your own drive type.

The `LBA Mode Control` option enables or disables ISA logical block address control for each drive. If you install an IDE drive that has a capacity greater than 528 MB, enable this option for that drive; the default setting is Disabled.

The `Physical Drive` option allows you to specify whether the drive will be the primary master or slave, or the secondary master or slave. The setting Default indicates that the drive is the primary master drive. Make sure the Physical Drive setting for each drive matches the hard disk drive jumpers you set when you installed the drive(s).

Defining your own drive type

If the parameters for your hard disk do not match the parameters detected by the auto-sensing feature, you can define your own drive type. (See Appendix A for a list of predefine hard disk drive types and their parameters.)

To define your own drive type, follow these steps:

1. Move the cursor to Type and select user,

2. Type the values in each field that are appropriate for your hard disk drive.

3. When you leave SETUP, make sure you save your changes.

Using the Advanced System Setup Options

When you select the `Advanced System Setup` option, you see the Advanced System Setup screen, from which you can configure the computer's cache memory, shadow memory, and parallel port. Your system can automatically configure the Memory Cache and `Memory Shadow` options for you. To avoid configuration problems, you should let the system configure these options.

Configuring cache memory

The system can configure your Memory Cache options or you can manually set them. If you have installed external cache, enabling cache memory improves system perform ante, especially in large data retrieval and processing environments.

You can configure the cache memory yourself, rather than let the system configure it for you. However, it's a good idea to let the system automatically configure these options.

Configuring shadow memory

The system can configure the Memory Shadow options or you can manually enable shadowing for all of your video memory or for specific blocks of video ROM.

> **Note**
> Shadowing for system memory is always enabled. For the best system perform ance, always set the Video shadow option to Enabled.

Your computer can access RAM faster than ROM. The options on this screen allow your system to copy the contents of its video ROM into RAM. When you use shadowing, your system can perform certain operations faster, providing a significant increase in perform ance.

If you enable video shadowing for specific blocks, the ROM located in each enabled block is copied to the shadow RAM area.

Configuring your parallel port mode

To select the mode you want to use for your parallel port, select the Advanced Chipset Control option. Then set the LPT Extended Mode option to Standard (for AT unidirectional mode), EPP mode (for Enhanced Parallel Port bidirectional mode), ECP mode (for Extended Capabilities Port bidirectional mode), or Disabled to disable the port.

If you use EPP mode or ECP mode, check your parallel device software documentation for the correct DMA channel (DRQ) setting. Then set jumpers JP17 and JP18 to match this setting, as described in Chapter 4.

Setting the Boot Options

When you select Boot Options from the Main Menu, you see the Boot Options screen, which allows you to define the drive boot sequence and determine which power-on diagnostic tests the computer performs when you start your system.

The Boot sequence option determines the order in which the computer checks the drives for an operating system when you turn it on or reset it. The table below describes the available options.

Boot sequence option settings

Select	To
A: then C: *	Load operating system from drive A. If it isn't there, load it from drive C (recommended setting).
C: then A:	Load operating system from drive C. If it isn't there, load it from drive A.
C: only	Load operating system from drive C.

* Default setting

If you set the Boot sequence option to C: only, you should disable the Floppy check option (described below) so the system doesn't access the diskette drive during the startup procedure. Disabling this option decreases the time needed to start the system.

The Floppy check option allows you to speed up the boot process by disabling power-on diagnostic checking of the diskette drive type. The default setting for this option is Enabled; however you should select Disabled if you set the Boot sequence option (described above) to C: only.

Using the Extended Features Options

When you select Extended Features from the Main Menu, you see the Extended Features screen, which allows you to customize the way your keyboard works when you turn on or reset your computer.

Numlock option

Select On to turn on Num Lock mode or select Off to turn it off each time you turn on or reset your computer.

Key click option

Select Disabled (the default setting) to turn off the clicking sound produced by your computer's speaker when you press a keyboard key. Select **Enabled** to turn on the clicking sound.

Keyboard auto-repeat rate option

Select the rate (in characters per second) at which you want your keyboard to repeat input of a character when you hold down a key. The default setting is 30/sec (30 characters per second).

Setting the Security and Anti- Virus Options

When you select the Security and Anti-Virus option from the Main Menu, you see the Security and Anti-Virus screen, which contains the options described below.

Selecting password types

You can define both User and Supervisor password levels for this system. If this system will be used by more than one person, you may want to set a Supervisor password for yourself and a User password for others you don't want to have complete access to the system. For instance, you may want to restrict access to the diskette drives or the virus protection features on this system.

See the next sections for instructions on selecting the type of password prompting you want and on entering, changing, or deleting passwords.

> **Note**
> If both a Supervisor password and a User password are enabled, SETUP displays options for setting the User password only to users who logged on with a User password.

Selecting password prompting

If you enable the Password on boot option, you must enter the Supervisor or User password each time you turn on the system. If you disable this option, but you've defined passwords, you must enter the password each time you start SETUP.

Entering or changing passwords

To specify a User password, you must first specify a Supervisor password. Follow these steps to enter or change a password

1. Select Set Supervisor Password and press **Enter.**

2. You see a Set Supervisor Password window. Type a password of up to seven characters and press **Enter.**

3. Type the same password a second time and press **Enter.** You see a message that your changes have been saved.

4. Press the spacebar. The Supervisor Password option now displays Enabled.

To set a User password, select the Set user Password option as you follow the steps above.

Deleting passwords

To delete your passwords, follow these steps:

1. Set the Password on boot option to Disabled.

2. Delete the User password by pressing **Enter** for both the password field and the confirmation field. Don't type any characters in these fields.

3. Then delete the Supervisor password the same way.

> Note
> If you set both a User and Supervisor password, you must delete the User password before you can access the Supervisor password option.

If you forget your password, see "Password Problems" in Chapter 6.

Using the virus protection features

Several options on the Security and Anti-Virus screen allow you to define system protection features.

The Diskette access option allows you to restrict access to your diskette drives based on the password levels you have defined. This prevents unauthorized users from accessing the drives and possibly introducing a virus to your system. You can restrict diskette access only if passwords are enabled and you have enabled the Password on boot option.

If you select Supervisor for this option, you can access the diskette drives only if you enter the Supervisor password when you start your system. Someone who starts the system with a User password, however, will see an error message when he or she tries to access the diskette drive. If you select user for the Diskette access option, you can access the diskette drives whether you enter the Supervisor or User password when you start the system.

> **Note**
> To use passwords for diskette drive access, you must enable the Password on boot option. If you select a password level for Diskette access, but leave the Password on boot option disabled, you see an error message whenever you try to access your diskette drive.

You can also protect your system by selecting Write protect for the Fixed disk boot sector option. When this option is enabled, the system displays an error message when a program tries to write to the boot sector of your hard disk drive. To use a legitimate program (such as the MS-DOS FORMAT command) you must disable the write protect option.

The System backup reminder and virus check reminder option son this screen allow you to define time intervals for the system to display a prompt asking you whether you have performed your scheduled virus check or your scheduled backup for your hard disk drive. You can disable these prompts or have them display Daily, Weekly, or Monthly. If you respond that you have not performed these functions, however, the system still starts norm ally.

Using the Green PC Features

The Green PC options allow you to define how the energy-saving features of this Energy Star compliant system work for you. The options on the Green PC Features screen allow you to disable the energy-saving feature or set time-out periods to put the system and hard disk drive in a low-energy standby mode.

The Inactivity Timer1 option sets the time-out period for video signals to your monitor. When the mouse or keyboard has been inactive for the time period you select here, your computer stops sending video signals to your monitor. If your monitor is also Energy Star compliant, it goes into a low-power standby mode because it isn't receiving video signals from your computer. Screens on monitors that aren't Energy Star compliant will go blank when your system is in standby mode.

If you select a time period for the Lockout Timer as well as the Inactivity Timerl option, the system won't accept your keyboard input for the specified period of time after your system has returned to an active mode. This allows time for your monitor to return to full power also.

The Fixed Disk Timeout option determines the time-out period for your hard disk drive. The hard disk drive goes into a low-power standby mode when the mouse and keyboard have been inactive for the period of time you've indicated.

Note

Some hard disk drives do not support a low-power standby mode. Also, the delay caused by the hard disk drive returning to active mode may cause errors in some applications. If you have problems, you may want to disable the Fixed Disk Timeout option.

Exiting SETUP

When you leave SETUP, you can save your settings, or exit SETUP without saving your settings. You can also return all values to the factory defaults.

To leave SETUP, press ESC from any SETUP screen. From the SETUP Main Menu, you can perform the following functions:

Load ROM Default Values	Loads the factory default settings stored in ROM back into CMOS. If you change your system configuration using the SETUP program and then have problems, you can load ROM values to boot the system and start over.
Load Values from CMOS	Loads the current values stored in CMOS for all SETUP options. This ignores any changes you have made through SETUP.
Save Values to CMOS	Saves the changes you have made to your configuration to CMOS.

Press ESC to exit SETUP and restart your computer.

Post-SETUP Procedures

After you run SETUP for the first time, you may need to install the operating system on your computer (ifit is not already installed). See your operating system manual for instructions.

Once you have installed your operating system, install any software you plan to use. See your application program manuals for instructions.

> **Note**
> If you plan to install IDE or video drivers for Windows applications, you must install Windows before you can install the drivers.

Installing the IDE Drivers

If you want to take advantage of the high-speed performance available through your system's local bus interfaces for the hard disk drives, you must install the IDE (integrated drive electronics) drivers included on Drivers Diskette 2.

Before you install the IDE drivers, make sure you back up your hard disk drive. Then use the installation program on Drivers Diskette 2 to install the drivers.

> **Note**
> Make sure you use the installation program to install the IDE drivers. If you simply copy the driver files, they won't work correctly.

You should always install the IDE driver for DOS. If you are using Windows, make sure you also install the IDE driver for Windows. You must install Windows before you install the IDE driver for Windows.

Follow these steps to install the IDE drivers:

1. Insert Drivers Diskette 2 in drive A

2. Log onto the IDE subdirectory on drive A.

3. Type INSTALL4 and press Enter

4. Follow the instructions on the screen to install the IDE drivers on your hard disk. This installation program changes your computer's CONFIG.SYS file so the system loads the IDE drivers at startup. If you select the IDE driver for Windows, this program also modifies the SYSTEM.INI file for Windows.

After you install the drivers, the system reboots.

Note

Not all hard disk drives can take full advantage of the local bus IDE interface. To take advantage of this feature, your hard disk drive must support a 32-bit data path that uses double-word I/O. To find out whether your hard drive uses double-word I/O, see the hardware specifications for the drive or contact the drive manufacturer and request a product specification.

Installing Video Drivers

The two driver diskettes included with your system contain utilities and video drivers for Windows and popular DOS applications. For instructions on installing video drivers, see the README file included on each of the Drivers diskettes.

> **Note**
> You must install Windows before you install the video driver for Windows.

To obtain drivers for additional applications or new drivers as they become available, contact the EPSON Connection or access the Epson America Forum on CompuServe.

Chapter 3

Using Your Computer

This chapter describes the following operations:

- ☐ Working comfortably
- ☐ Using energy wisely
- ☐ Using your Green PC features
- ☐ Inserting and removing diskettes
- ☐ Stopping a command or program
- ☐ Resetting the computer
- ☐ Using the passwords
- ☐ Changing the processor speed.

Working Comfortably

If you spend a lot of time at your computer, you may experience occasional fatigue or discomfort caused by repetitive motions or too much time spent in one position. If you follow the guidelines in this section, you may avoid these problems and actually increase your productivity.

Take a few minutes to read this section for suggestions about:

- ☐ Using the right furniture
- ☐ Positioning your monitor
- ☐ Lighting your workspace

- ☐ Using a keyboard and mouse
- ☐ Maintaining good posture and work habits.

Using the Right Furniture

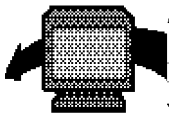
Selecting a good desk and using the right type of chair can make a big difference in your level of comfort. When you set up your furniture, consider these suggestions:

An L- or U-shaped desk configuration works well because it provides ample space to hold your computer equipment and work materials while keeping everything within easy reach. A split-level desk or one with a pull-out keyboard drawer lets you place the keyboard in a comfortable typing position.

Since you'll usually be sitting when you use your computer, it's important to have a good chair. An adjustable chair allows you to support your body in the correct position. Make sure the chair supports your lower back; the backrest should fit the curvature of your spine. To reduce fatigue, try to use a chair with adjustable, padded armrests so you can occasionally rest your arms while you work.

Make sure the seat and backrest are wide enough so you can sit in a variety of positions throughout the day. Also leave enough room under the work surface so you can vary the position of your legs.

Adjust the height of your chair so when you are using the keyboard or mouse your upper arms are vertical and your forearms and wrists are horizontal. For good circulation, your feet should rest flat on the floor with your lower legs vertical and your knees level with your hips. You may need to use a footrest to maintain the correct alignment for your legs.



Positioning Your Monitor

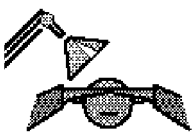
Place the monitor so it is directly in front of you with the top of the screen slightly below eye level when you are sitting at the computer. You may want to place it on top of the computer or on a stand.

Your line of sight to the screen should be about 10 to 20 degrees below the horizontal. If the monitor has a tilt and swivel base, you can adjust the position of the monitor screen for the best viewing angle.

Sit about an arm's length or more away from the monitor. The most comfortable viewing distance depends on the size of the screen characters and your ability to focus on the display.

Adjust the monitor's brightness and contrast controls to maximize image clarity, and keep the screen clean.

Try placing any source documents you are using on a copy stand and position the stand next to the screen at the same eye level. This reduces neck strain and makes it easier for your eyes to move back and forth between the document and the screen.



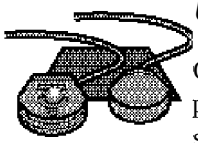
Lighting Your Workspace

Appropriate lighting increases your comfort and productivity, and it's good for your eyes. Arrange your computer and light sources to minimize glare and bright reflections.

Position the monitor so that any windows in the room face the sides of the monitor, not the front or back. This will help reduce glare.

For working at the computer, indirect or shielded lighting is best, and it should light your entire office equally. Make sure the lighting is not too bright, because this can make your eyes tired from continually readjusting between the relative dimness of the screen and the bright surroundings. You can use window blinds, shades, or drapes to control the amount of daylight in the room or reduce overhead lighting by turning off or dimming the lights.

Here is a simple way you can test your lighting. While looking at the screen, use your hand to shield your eyes from the brightest light source in the room (such as a window or overhead light). If you feel a sense of relief, no matter how small, your current lighting is too bright.



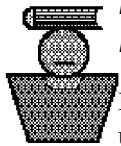
Using the Keyboard and Mouse

Constant use of a keyboard, mouse, or any pointing device can lead to a variety of aches and strains. To prevent injury, keep your hands relaxed and rest them frequently

Try to keep your fingers parallel with your forearms to prevent straining your wrists. Adjust the angle of the keyboard so the slope is no more than 25 degrees. (The keyboard has legs on the bottom which allow you to adjust the angle.)

Keep your hands and fingers relaxed when you are typing and try not to hit the keys too hard; using too much force creates tension in your hands. Remove your hands from the keyboard when you are not using it and take frequent breaks to stretch your hands and fingers.

When using a mouse, keep your wrist and fingers relaxed. Let go of the mouse frequently and stretch or relax your hand. Leave enough space on your work surface so you can freely move the mouse.



Maintaining Good Posture and Work Habits

Here are suggestions to help you stay fit while using your computer. If you form good work habits, you shouldn't have to spend too much time thinking about it!

- ☐ Work in a relaxed, natural, upright position and let the chair support you. Your back and neck should be straight with your shoulders down and relaxed. Keep the elbows and hips bent at about a 90 degree angle and your forearms and thighs parallel to the floor.

- ☐ Try to keep your arms in an easy, natural position with your elbows near your body and level with or slightly lower than the keyboard. Your wrists should be straight, not bent, and your hands should rest lightly on the keys or the mouse.

- ☐ Rest your eyes occasionally by closing them or focusing on a fixed spot in the distance.

- ☐ Change your sitting position frequently throughout the day to avoid muscle fatigue. Take periodic breaks; stand up, stretch, and move around.

Using Energy Wisely

By purchasing this low-power, Energy Star compliant computer, you join a growing number of users concerned about conserving energy. Here are a few additional tips you can use to be even more energy-wise:

- ☐ If your printer and monitor aren't Energy Star compliant, turn them off when you're not using them.
- ☐ Use the print preview option on your software before you print something. You'll be able to catch formatting errors before you commit them to paper.
- ☐ If you have an electronic m ail system available to you, send E-mail rather than memos. Not only is this faster, but you '11 save paper and storage space too.
- ☐ Use recycled paper whenever you can and, if possible, reuse or recycle used paper instead of throwing it away

Using Your Green PC Featutes

If you have an Energy Star compliant monitor, your computer places the monitor, the hard disk drive, or both into a low-power standby mode when the keyboard or mouse has been inactive for the time periods you select in SETUP. See Chapter 2 for information on setting these values.

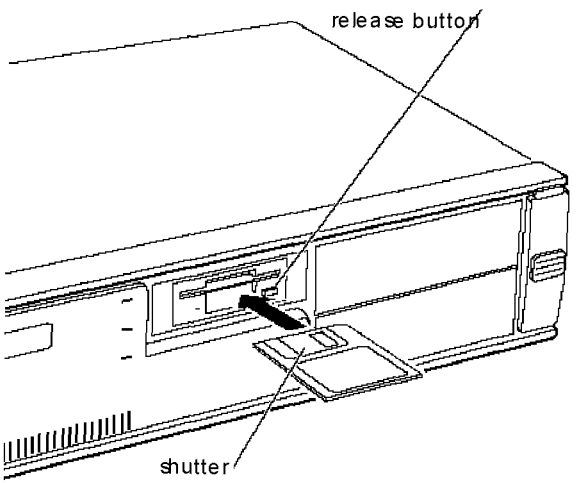
When your system is in standby mode, the Num Lock light on your keyboard flashes and your screen is blank. (Screens on non-compliant monitors go blank, but do not enter low-power standby mode.) Press any key or move the mouse to resume activity.

If the hard disk drive is in standby mode, it doesn't return to active mode until you access it. You'll hear it start again. It will take a few seconds to reach its operating speed and read or write to the disk. The hard disk drive access light turns on when the system begins accessing the disk.

Note
Some hard disk drives do not support a low-power standby mode. Also, the delay caused by the hard disk drive returning to active mode may cause errors in some applications. If you have problems, you may want to disable the standby mode for the hard disk drive.

Inserting and Removing Diskettes

To insert a diskette into a 3.5-inch drive, hold the diskette with the label facing up and the shutter leading into the drive, as shown in the following illustration. Slide the diskette into the drive until it clicks into place.



To insert a diskette into a 5.25-inch drive, hold the diskette with the label facing up and the read/ write slot leading into the drive. When the disk is completely in the drive, turn down the latch to secure the diskette in the drive.

When you want to remove the diskette, make sure the drive light is offi then press the release button or turn the latch. Remove the diskette and store it properly.

Caution
Never remove a diskette, reset the computer, or turn it off while a diskette drive light is on. You could lose data. Also, remove all diskettes before you turn off the computer.

Stopping a Command or Program

You may sometimes need to stop a command or program while it is running. If you want to stop a DOS or DOS application program command, try one of the following:

- Press **Pause**
- Press **Ctrl C**
- Press **Ctrl Break.**

If these methods do not work, you may need to reset the computer as described below. Do not turn off the computer to exit a program or stop a command unless you have to, because the computer erases any data you did not save.

Resetting the Computer

Occasionally, you may want to clear the computer's memory without turning it off. You can do this by resetting the computer.

For example, if an error occurs and the computer does not respond to your keyboard entries, you can reset it to reload your operating system and try again. However, resetting erases any data in memory that you have not saved; so reset only if necessary.

> **Caution**
> Do not reset the computer to exit a program. Some programs classify and store new data when you exit them. If you reset the computer without properly exiting a program, you may lose data.

If you set the Boot sequence in SETUP to C: only (see Chapter 2), the operating system must be on the hard disk when you reset the computer. If you selected the other options, the operating system must be either on the hard disk or on a diskette in drive A. If you do not have a hard disk, insert the operating system diskette in drive A.

If you are using DOS, you can press **Ctrl Alt Del** to reset the system. (If you are using Windows, you must press **Ctrl Alt Del** twice.) You can also press the **RESET** button located on the front right side of your computer. The screen displays nothing for a moment and then the computer reloads the operating system.

If resetting the computer does not correct the problem, you probably need to turn it off and on again. Remove any diskette(s) from the diskette drive(s). Turn off the computer and wait 20 seconds. If your operating system is not on the hard disk drive, insert a bootable diskette (one that contains the necessary portions of the operating system) in drive A. Then turn on the computer.

Using a Password

Using SETUP, you can define both a Supervisor level p as sword and a User level password. You can also specify whether a password is required when you start the system. This password can also control who has access to the diskette drives.

If you enabled the Password on boot option in SETUP, you must enter the Supervisor or User password every time you turn on or reset the computer. If you enter a password but disable the Password on boot option, you must enter the password when you start SETUP.

If you set the Diskette access option to Supervisor, you can access a diskette drive only if you entered the Supervisor password when you started your system. If you entered a User password when you started the system but the Diskette access option is set to Supervisor, you see an error message when you access the diskette drive.

When you need to enter your password, you'll see the Security Check window containing the prompt, Enter password:. As you type your password, you see a rectangle for each character you type. When you press **Enter,** the computer loads the operating system (or starts SETUP).

If you don't enter the correct password the first time you type it, you can try two more times. If you haven't entered the correct password on the third try, the computer locks up to prevent unauthorized access. You see the message:

```
SYSTEM DISABLED
```

You must either turn off the computer or press the RESET button to start over. In this situation, you cannot reset the computer by pressing **Ctrl Alt Del.**

> **Note**
> If you want to delete your password, you must run the SETUP program and follow the instructions for deleting a password in Chapter 2.

If you do not remember your password, see "Password Problems" in Chapter 6.

Changing the Processor Speed

Your computer's processor can operate at two speeds: fast (60 or 66 MHz) or slow (8 MHz). At fast speed, the computer performs all tasks faster. The slow speed is available for compatibility with some copy-protected programs or application programs with specific timing requirements.

Some copy-protected programs also require you to leave a key disk—the diskette that contains the copy protection—in the diskette drive. To use a copy-protected program, you can change the speed to slow to access the diskette and return it to fast speed when you are finished.

When your computer is operating at fast speed, the SPEEDlight on the front panel is on. When the computer is operating at slow speed, the light is off.

You can change the processor speed temporarily by entering one of the following commands from the numeric keypad on your keyboard:

- To select slow speed, press **Ctrl Alt -;** this turns off the SPEED light.

- To select fast speed, press **Ctrl Alt +; the SPEED light comes** on.

> **Note**
> You can use the commands listed above while you are running a program. However, if the program uses one of these commands for another function, you cannot use it to change the processor speed.

The speed setting rem ains in effect until you reset your computer or turn it off.

Chapter 4

Installing and Removing Options

You can enhance the performance of your computer by adding optional equipment such as option cards, and system, video, or cache memory modules.

This chapter first describes how to remove your computer's cover to install options and how to replace the cover when you are finished. It then describes the following:

- Locating the internal components
- Changing the jumper settings
- Installing and removing SIMMs (single inline memory modules)
- Instailing and removing option cards
- Adding video memory
- Instailing external cache.

> **Caution**
> Never install options or change jumper settings when the computer is turned on or the power cable is connected to the computer.

Once you have installed your options, see "Post-installation Procedures" on page 4-22.

Removing the Cover

You need to remove the computer's cover to install any of the options described in this chapter or to install or remove a disk drive (as described in Chapter 5). Follow these steps:

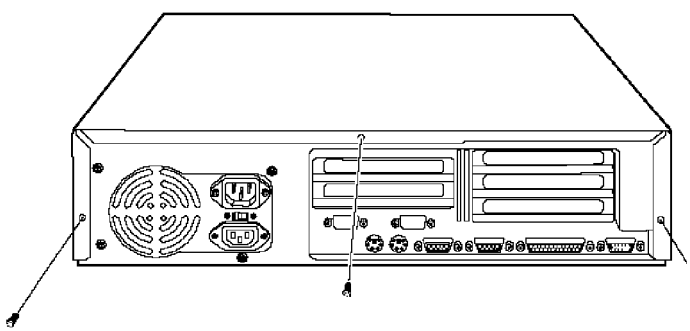
1. Turn off the computer and then any peripheral devices.

2. Disconnect the computer's power cable from the electrical outlet and from the back panel. Also disconnect any other cables that are connected to the computer, including the keyboard cable.

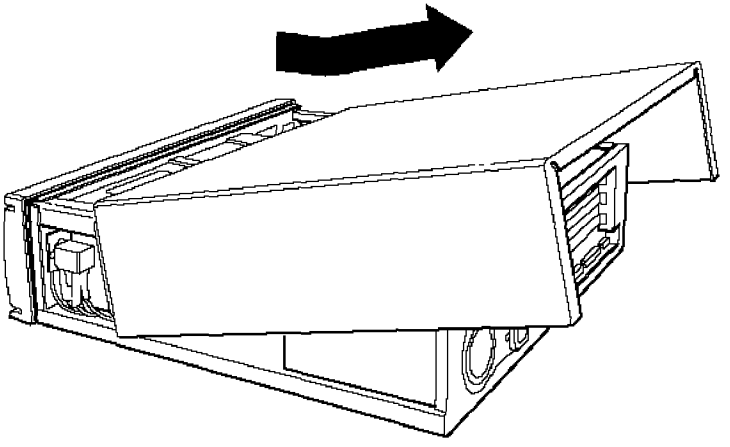
3. If the monitor is on top of the computer, lift it off and set it to one side.

4. Turn the computer around so the back panel is facing you.

5. Remove the three screws securing the back panel, as shown below.



6. Grasping the sides of the cover, lift it up at an angle and pull it off, as shown below:



7. Set the cover aside

8. Ground yourself to the computer by touching the metal surface of the back panel.

WARNING

Be sure to ground yourself by touching the back panel of the computer every time you remove the cover. If you are not properly grounded, you could generate an electric shock that could damage a component when you touch it.

Replacing the Cover

When you are ready to replace the computer's cover, follow these steps:

1. Make sure all the internal components are installed properly,

2. Check all cable connections, especially those that might have been loosened during your work.

3. Make sure all cables are out of the way so they do not catch on the cover.

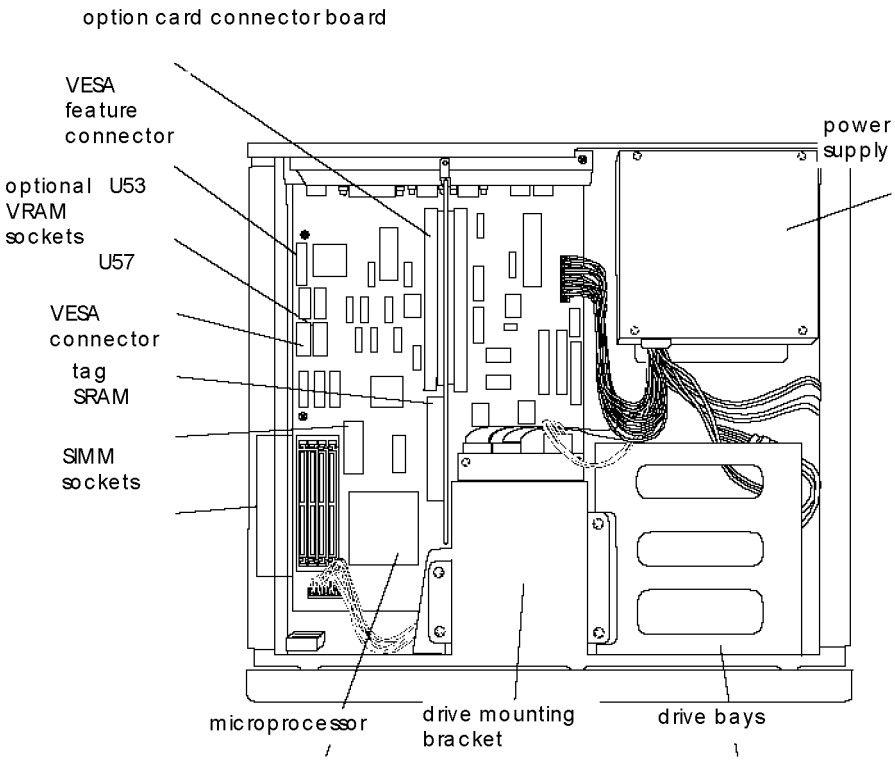
4. Insert the lip at the front of the cover between the front bezel and the computer case and guide it straight down. (See the illustration on page 4-3.)

5. Replace the three cover retaining screws.

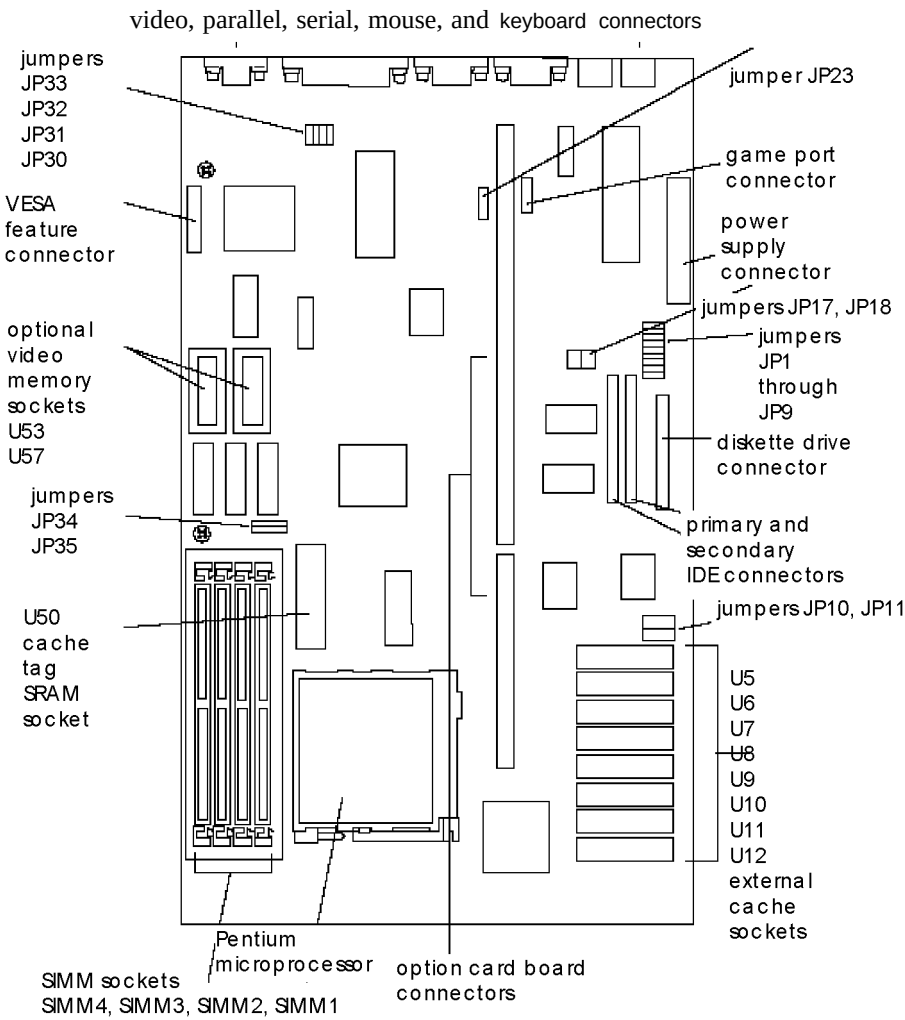
6. Reconnect the computer to the monitor, printer, keyboard, and any other peripheral devices you have. Then reconnect the power cable to the back of the computer and to an electrical outlet.

Locating the Internal Components

As you follow the instructions in this chapter, refer to the illustration below to locate the major components inside your computer.



The illustration below shows the main system board inside your computer. Use this illustration to locate jumpers, SIMM sockets, external cache sockets, and video memory chip sockets.



Changing the Jumper Settings

The jumpers on the main system board are preset to factory default positions, indicated by an asterisk (*) in the tables below. (See the illustration above to locate jump ers.) Use the inform ation in this section to change jumper settings, if necessary.

> **Note**
> Any jumpers not listed in the following tables are for service purposes only. Do not change their settings.

Miscellaneous jumper settings

Jumper number	Jumper setting	Function
JP4	1-2* 2-3	Enables diskette drive controller Disables diskette drive controller
JP5	1-2* 2-3	Enables COM1 serialporl Disables COMl serialporl
JP6	1-2* 2-3	Assigns COM1 serialport as COM1 Assigns COM1 serialport as COM3
JP7	1-2* 2-3	Enables COM2 serialport Disables COM2 serialporl
JP8	1-2* 2-3	Assigns COM2 serialport as COM2 Assigns COM2 serialport as COM4
JP9	1-2* 2-3	Enables optional game port Disables optional game port
JP10	1-2* 2-3	Enables the primary lDEhard disk drive controller Disables the primary lDEhard disk drive controller
JP111	1-2* 2-3	Enables the secondary lDEhard disk drive controller Disables the secondary lDEhard disk drive controller
JP23	2-3 * 3-4 1-4	Selects the system board battery Discharges CMOS memory; resstsfactory defaults Selects external battery (3.6 Volt)

Misellaneous jumper settings (continued)

Jumper number	Jumper setting	Function
JP30	Off*	Disables IRQ9 for VGA
	On	Enables IRQ9 for VGA

External cache jumper settings

Cache size	JP34	JP35
256KB	1-2*	Off*
1MB	2-3	2-3

SVGA jumper settings

VGA jumper function	**JP31**	**JP32**	**JP33**
Enable on-board VGA	On *	On *	On *
Disable on-board VGA	Off	Off	Off

Parallel port DMA channel (DRQ) settings

Jumper number	DRQ1 DMA channel	DRQ3 DMA channel
JP17	1-2*	3-4
JP18	3-4 *	1-2

Note: DMA channel for the parallel port if set to EPP or ECP mode in SETUP

Setting the Jumpers

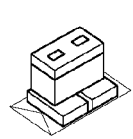
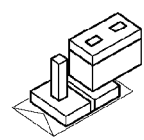
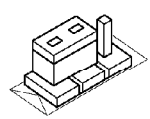
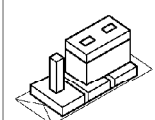
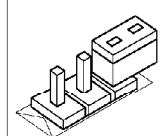
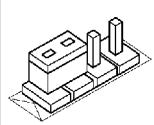
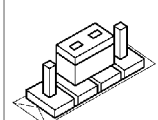
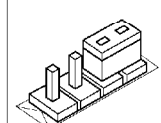
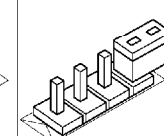
To change a jumper setting, follow these steps:

1. Refer to the illustration on page 4-6 to locate the jumpers.

2. If any option cards are installed in your computer, you may need to remove them to access the jumpers; see page 4-18.

3. A jumper's setting is determined by where the jumper is placed on the pins. Use the table below to identify the pin settings for 2-, 3-, and 4-pin jumpers. (To identify the pin numbers, look at the system board under the jumper.)

Jumper positions

Type	Position			
2-pin	On 	Off 		
3-pin	1-2 	2-3 	Off 	
4-pin	1-2 	2-3 	3-4 	Off 

To move a jumper from one position to another, use needle-nose pliers or tweezers to pull it off its pins and gently move it to the desired position.

> **Caution**
> **Be** careful not to bend the jumper pins or damage any components on the main system board.

4. Replace any option cards you removed, if necessary. See page 4-15 for instructions.

InstaIling Memory Modules (SIMMs)

Your computer comes with 8MB of memory on a SIMM. By installing additional SIMMs, you can increase the amount of memory in your computer up to 128 MB.

There are four SIMM sockets on the main system board, and each can contain one memory module. You can install lMB, 2MB, 4MB, 8MB, 16MB, and 32MB SIMMs. The sockets are labelled on the main system board between the sockets.

The following table shows the recommended SIMM configurations. Do not install SIMMs in any other configuration.

SIMM configurations

SIMM1	SIMM2	SIMM3	SIMM4	Total memory
1MB	1MB	—	—	2MB
1MB	1MB	1MB	1MB	4MB
1MB	1MB	2MB	2MB	6MB
1MB	1MB	4MB	4MB	10MB
1MB	1MB	8MB	8MB	18MB
1MB	1MB	16MB	16MB	34MB
1MB	1MB	32MB	32MB	66MB
2MB	2MB	—	—	4MB
2MB	2MB	2MB	2MB	8MB
2MB	2MB	4MB	4MB	12MB
2MB	2MB	8MB	8MB	20MB

SIMM configurations (continued)

SIMM1	SIMM2	SIMM3	SIMM4	Total memory
2MB	2MB	16MB	16MB	36MB
2MB	2MB	32MB	32MB	68MB
4MB	—	—	—	4MB *
4MB	4MB	—	—	8MB
4MB	8MB	—	—	12MB *
4MB	4MB	4MB	4MB	16MB
4MB	16MB	—	—	20MB *
4MB	4MB	8MB	8MB	24MB
4MB	32MB	—	—	36MB *
4MB	4MB	16MB	16MB	40MB
4MB	4MB	32MB	32MB	72MB
8MB	—	—	—	8MB *
8MB	8MB	—	—	16MB
8MB	16MB	—	—	24MB *
8MB	8MB	8MB	8MB	32MB
8MB	32MB	—	—	40MB *
8MB	8MB	16MB	16MB	48MB
8MB	8MB	32MB	32MB	80MB
16MB	—	—	—	16MB *
16MB	16MB	—	—	32MB
16MB	32MB	—	—	48MB *
16MB	16MB	16MB	16MB	64MB
16MB	16MB	32MB	32MB	96MB
32MB	—	—	—	32MB *
32MB	32MB	—	—	64MB
32MB	32MB	32MB	32MB	128MB

* In these non-interleave configurations you cannot install additional SIMMs in sockets SYMM3 and SIMM4.

Use only tin-plated, 32-bit or 36-bit, 72-pin, fast-page mode SIMMs that operate at an access speed of 80ns or faster. Be sure all the SIMMs operate at the same speed.

Your SIMM sockets may not look exactly like the ones in the illustrations. If you're not sure how to install SIMMs, contact the EPSON Connection and ask for assistance.

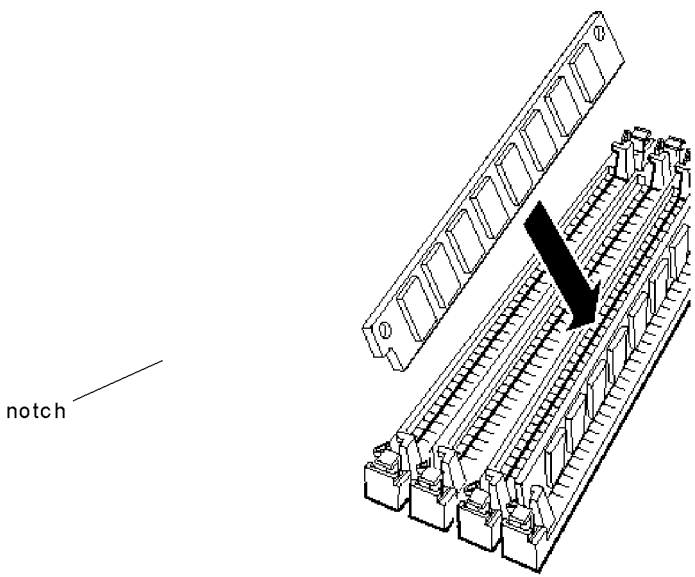
Inserting SIMMs

Make sure the computer is turned off and the cover is off. Then follow these steps to install SIMMs:

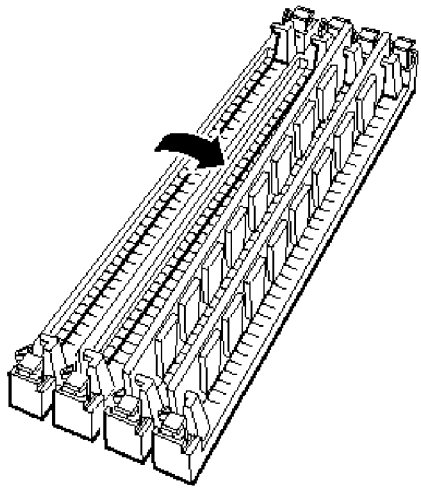
1. Refer to the illustration on page 4-5 to locate the SIMM sockets on the left front side of the main system board, next to the microprocessor.

2. Remove any option cards that may be blocking your access to the SIMM sockets. (See page 4-18 for instructions.)

3. Position the SIMM at an angle over the empty SIMM socket with the notch in the corner of the SIMM facing the front of the computer.



4. Push the SIMM into the socket until it is seated firmly in the slot. Then tilt it upright, as shown below, guiding the hole at each end of the SIMM over the retaining post at each end of the SIMM socket. If it does not go in smoothly, do not force it; pull it all the way out and try again.



5. Replace any option cards you removed. (See page 4-15 for instructions.)

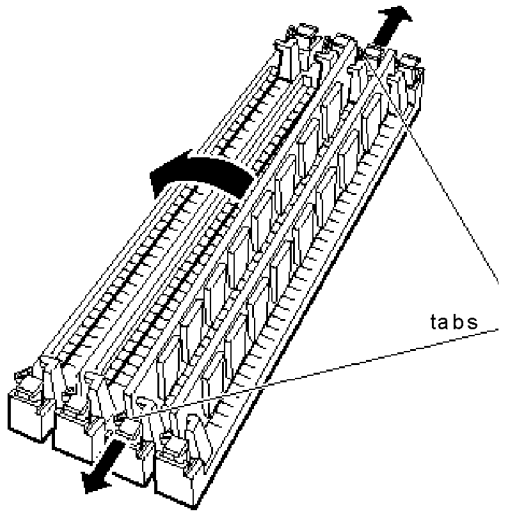
Removing SIMMs

If you need to remove SIMMs from your computer (to install different ones, for example), follow the steps below:

1. Use the illustration on page 4-5 to locate the SIMM sockets on the left front side of the main system board, next to the microprocessor.

2. Remove any option cards that may be blocking your access to the SIMM sockets. (See page 4-18 for instructions.)

3. Use your fingers or a small screwdriver to carefully pull away the tabs that secure the SIMM at each end, as shown below. The SIMM falls to the side; remove it from the socket.



4. Follow the same procedure to remove any other SIMMs.

5. If you are inserting different SIMMs, follow the instructions on page 4-12 to install them.

6. Replace any option cards you removed, as described below.

Installing an Option Card

This section explains how to install option cards in your computer. Your computer has five 16-bit slots, two for full-length cards and three for half-length cards. The two full-length slots are VESA compatible. (The lowest full-length slot accommodates only a half-length card.)

> **Caution**
> Before you install any option cards in your system, make sure that each card does not draw more current than the limits listed in the Appendix A.

As you install option cards, keep these guidelines in mind:

- ☐ Install VESA compatible cards in either of the two slots with the extra VESA connectors.
- ☐ If you have an 8-bit card, you can install it in a 16-bit slot, as long as it fits.
- ☐ Check the components on your card and the system board before deciding which slot to use. Make sure that no components are touching or obstructing other cards or cables.
- ☐ When you unpack the option card, do not touch the components on the circuit board or the gold-edged connectors. Place the card gently on top of its original packing material with the component side facing up. Keep the packing materials in case you remove it later.
- ☐ Adjust any switches or jumpers on the card, if necessary, before you install it. (See the option card instructions.) Also, see if you need to change any jumpers on the system board.

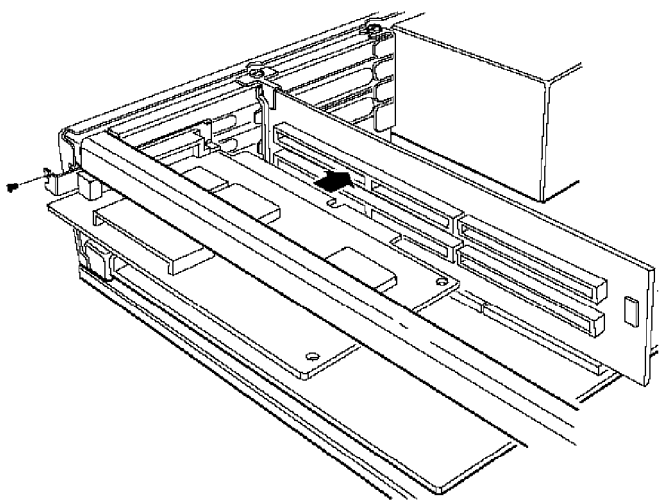
Installing a VESA Card or a Full-length Card

Follow these steps to install an option card in one of the full-length slots:

1. Remove the retaining screw securing the option slot cover to the computer, as shown below. (Keep the screw to secure the option card to the computer.)

2. Slide out the slot cover and set it aside. (Store it in a safe place in case you remove the option card later.)

3. Hold the card along the top corners and guide it into the slot, as shown below. (If you are installing a full-length card, insert the front edge of the card into the corresponding guide inside the computer's front panel.)



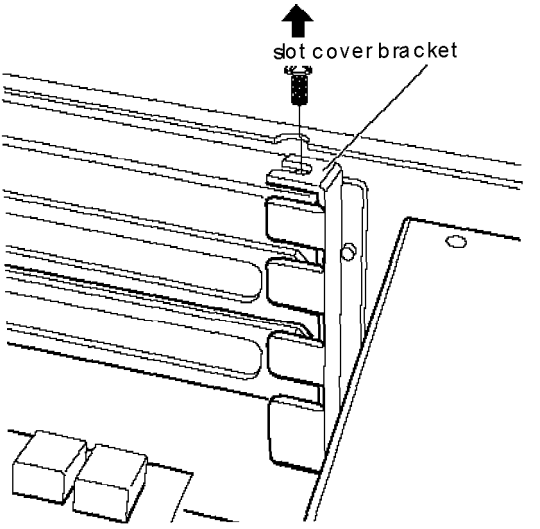
Once the connectors reach the slot, push the card in firmly (but carefully) to insert it fully. You should feel the card fit into place. If it does not go in smoothly, do not force it; pull the card all the way out and try again.

4. Secure the end of the card to the computer with the retaining screw.

Installing a Half-length Card

Follow these steps to install a card in one of the half-length slots:

1. Remove the retaining screw securing the slot cover bracket. Remove the bracket by lifting it straight up and out of the small metal holder at the bottom.



2. Remove the slot cover for the slot you are going to use

3. Hold the card along the top corners with the components facing down and guide it into the slot. Once the connectors reach the slot, push the card in firmly (but carefully) to insert it fully. You should feel the card fit into place. If it does not go in smoothly, do not force it; pull the card all the way out and try again.

4. Replace the slot cover bracket by inserting it into the small metal holder below the option slots.

5. Secure the slot cover bracket to the computer with the retaining screw.

Removing an Option Card

You may need to remove an option card to access components on the main system board or if you no longer need it. Refer to the illustrations on pages 4-16 and 4-17 and follow these steps:

1. If you are removing a card from one of the full-length slots, first remove the retaining screw securing the option card to the computer. Then pull the card straight out of the slot.

2. If you are removing a card from one of the half-length slots, first remove the slot cover bracket. Then pull the card straight out of the slot.

3. If you are not installing another option card, replace the option slot cover, the slot cover bracket (if necessary), and retaining screw.

Adding Video Memory

Your computer comes with lMB of video memory. You can increase your video memory to 2MB by installing two 256KB x 16-bit, video DRAM chips. Additional video memory is useful for running graphics-intensive applications or for supporting high resolutions with many colors.

Note that your video memory sockets may not look exactly like the ones in the illustration. If you‘re not sure how to install video memory chips, contact the EPSON Connection and ask for assistance.

Follow these steps to install video memory chips:

1. Locate the video memory chip sockets on the left side of the main system board, shown on page 4-5. The chip sockets are labelled U53 and U57.

2. If there is an option card in your way, remove it. See page 4-18 for instructions.

> **Caution**
> To avoid generating static electricity and damaging the memory chips, ground yourself by touching the metal surface on the inside of the computer's back panel. Then remain as stationary as possible while you install them.

3. Position the chip over the socket and align the notch in the chip's corner with the notch in the corner of the socket.

4. Gently press the chip into the socket; then push down firmly on both ends to make sure it is well-seated.

5. Repeat steps 3 and 4 to install the other chip.

6. Replace any option cards you removed; see page 4-15.

7. Now run SETUP as described in Chapter 2 so that your system recognizes the increased video memory.

Installing External Cache

Your computer comes with 256KB of external cache installed on eight 28-pin, 32K x 8, 20ns SRAM DIP chips and one 32K x 8, 20ns tag chip. You can increase the cache to lMB by replacing these chips with eight 128K x 8, 20ns SRAM chips.

You must install chips in one of the configurations in the table below (each bank contains four cache memory sockets).

Cache memry configurations

BANK 0 U5, 6,7,8	BANK 1 U9,10,11,12	Tag SRAM U50	Total cache
32K **X** 8	32K **X** 8	32K **X** 8	256KB
128K x 8	128K x 8	32K **X** 8	1MB

Follow these steps to install the external cache chips:

1. Remove the internal drive mounting bracket in your computer. See page 5-2 for instructions.

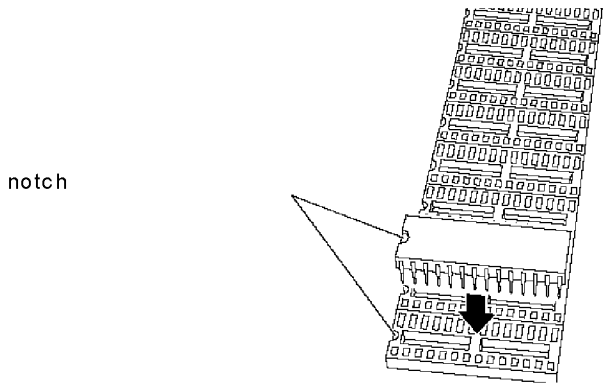
2. Locate the external cache memory sockets on the main system board, shown on page 4-6.

3. You may need to remove any option cards that are blocking access to the sockets. See page 4-18 for instructions.

> **Caution**
> To avoid generating static electricity and damaging the cache chips, ground yourself by touching the metal surface on the inside of the computer's back panel. Then rem ain as stationary as possible while you install them.

4. Inspect each cache memory chip; the pins should point inward at slightly less than a 90° angle. If any of the pins are bent or crooked, straighten them gently with your fingers or with small tweezers to align them with the other pins. Be careful when you do this; the pins are fragile and can break off easily.

5. Position one of the cache chips over the first socket as shown below, aligning the pins on the chip with the holes in the socket. Align the small notch on the end of the chip with the corresponding notch on the socket.



6. Gently press the chip halfway into the socket (to make sure it is correctly aligned). If the chip goes in at an angle, rem ove it and try again.

7. When the chip is properly positioned, push down firmly on both ends of the chip to make sure it is well-seated.

8. Repeat steps 5 through 7 for each of the remaining chips.

9. Now install the tag SRAM chip in socket U50, next to the microprocessor, as described in steps 5 through 7 above. See page 4-6 to locate socket U50 on the main system board.

10. Change jumpers JP34 and JP35 as described on page 4-8, to match to the amount of cache you installed.

11. Replace any option cards you removed (page 4-15); then replace the computer's cover.

12. Replace the drive mounting bracket as described on page 5-8.

13. Run SETUP to enable the External Cache option and the Video shadow option. You can access these options from the Advanced System Setup menu; see Chapter 2.

Post-installation Procedures

After you install or remove options such as memory modules or option cards, you must run SETUP to update the computer's configuration. See Chapter 2 for instructions. Additionally, you may need to add some commands to your configuration files. See your operating system manual and the manual that came with your optional equipment.

Chapter 5

Installing and Removing Drives

This chapter describes how to install and remove optional drives in your computer. You can use these instructions to install a variety of devices, including hard disk drives, a diskette drive, a tape drive, a CD-ROM drive, or an optical drive. Although your drive may look different from the ones illustrated here, you should be able to install it the same way.

Your computer can hold up to four mass storage devices, including the diskette drive that came with your system. You can install one hard disk drive using the internal mounting bracket below the diskette drive. In the externally accessible bays, you can install a second diskette drive or another type of drive.

To install or remove a drive, first remove the computer's cover as described in Chapter 4. Then remove any option cards that may be in your way. Once you have installed the drive, replace any option cards you removed. See Chapter 4 for instructions.

Follow the appropriate instructions in this chapter to do the following:

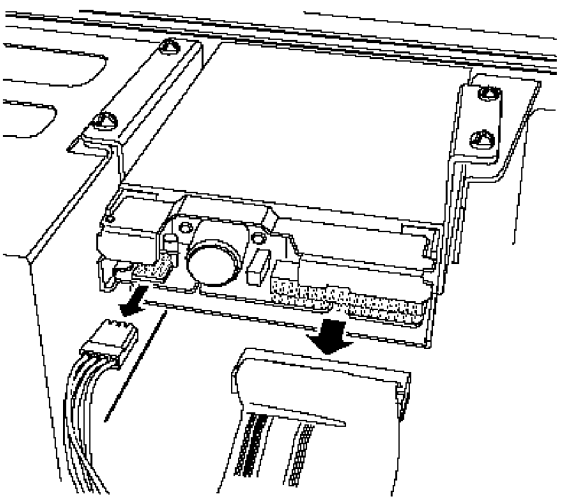
- ☐ Remove the diskette drive and mounting bracket
- ☐ Install a hard disk drive using the mounting bracket
- ☐ Remove a hard disk drive from the mounting bracket
- ☐ Install a drive in an externally accessible drive bay
- ☐ Remove a drive from an externally accessible drive bay
- ☐ Perform post-installation procedures,

Some of the steps in this chapter may not apply for the drive you are installing. See the documentation that came with your drive for more information.

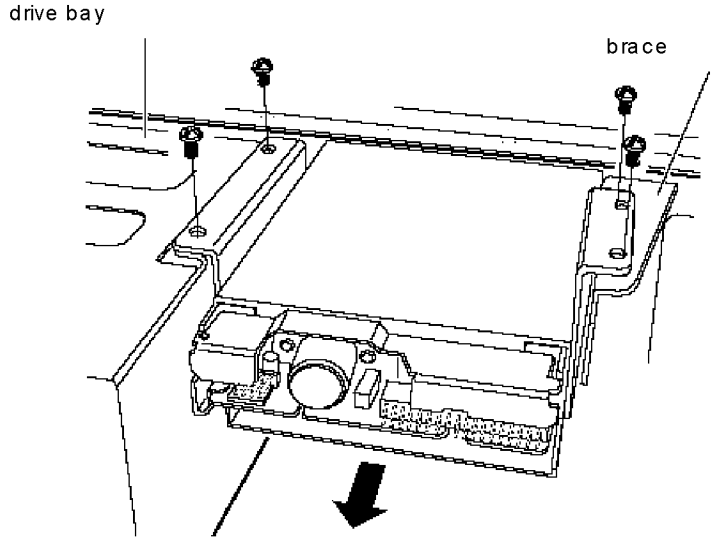
Removing the Drive Mounting Bracket

Your computer has a 3.5-inch diskette drive installed in a mounting bracket. (You may also have a hard disk drive installed in the bracket.) In order to install or remove any drives, you must first remove the drive mounting bracket. Follow these steps:

1. Remove the two cables from the diskette drive, as shown below. Grasp the connectors and pull them straight out so you do not bend the pins; do not pull on the cables. (If necessary, remove the cables from the hard disk drive also.)



2. Remove the screws securing the bracket to the drive bay and brace.



3. Slide the bracket away from the front of the computer and lift it out.

Installing a Hard Disk Drive in the Mounting Bracket

You can install a hard disk drive below the diskette drive in the mounting bracket, once you have removed the bracket and drive from the computer. In order to fit in this space, your hard disk drive must be 1 inch high by 3½ inches wide. If you have a larger hard disk drive, you can install it in one of the drive bays (see page 5-15).

This section includes steps for the following procedures:

- ☐ Removing the mounting frames from the hard disk drive (if necessary)
- ☐ Installing a hard disk drive in the mounting bracket
- ☐ Replacing the mounting bracket in the computer
- ☐ Connecting the drive cables.

Be sure to check the jumper settings on the hard disk drive before you install it. If you have two hard disk drives, one must be configured as the master (which contains your operating system), and the other as the slave.

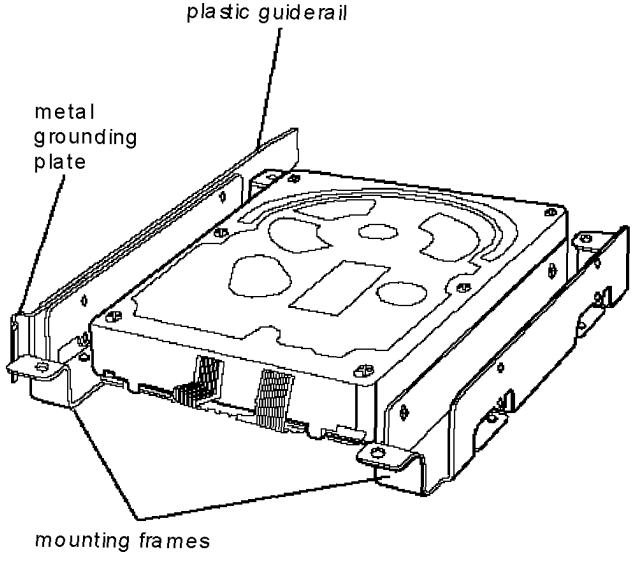
You should connect your first and second drives to the primary hard disk drive interface, with one drive configured as the master and one as the slave. If you install a third and fourth drive, connect them to the secondary hard disk drive interface, and again configure one as the master and the other as the slave.

Also, you may need to know the number of cylinders, heads, sectors, etc., if the hard disk drive auto-sensing feature in SETUP is unable to correctly identify your drive. The hard disk drive table used in the SETUP program is included in Appendix A, along with a table of jumper settings for high-capacity EPSON drives. If your drive is not listed or you need more information, see the documentation that came with your drive or contact the manufacturer.

Removing the Mounting Frames

If there are mounting frames attached to your hard disk drive, remove them before you install the drive. Follow these steps:

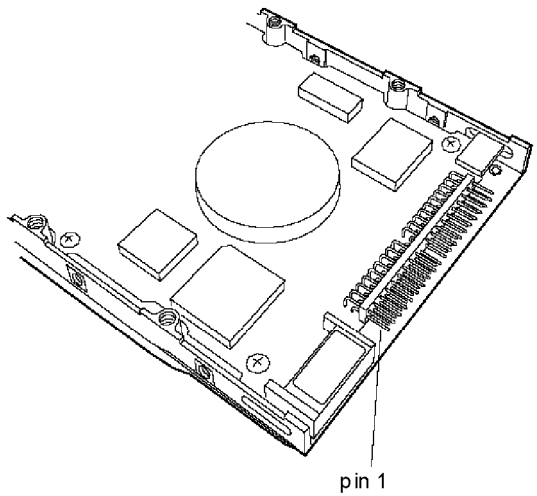
1. On your drive, there may be a plastic guiderail and metal grounding plate attached to one of the mounting frames. If so, remove the screws securing them to the mounting frame and remove the guiderail and grounding plate.



2. Then remove the two screws securing each mounting frame to the drive and remove the frames.

Note

Before you install the hard disk drive, turn it over so you can see the circuit board, as shown below. Locate the side of the drive connector containing pin 1, indicated by a "1" or "2" printed on the board. You need to know the location of pin 1 when you connect the hard drive cable.

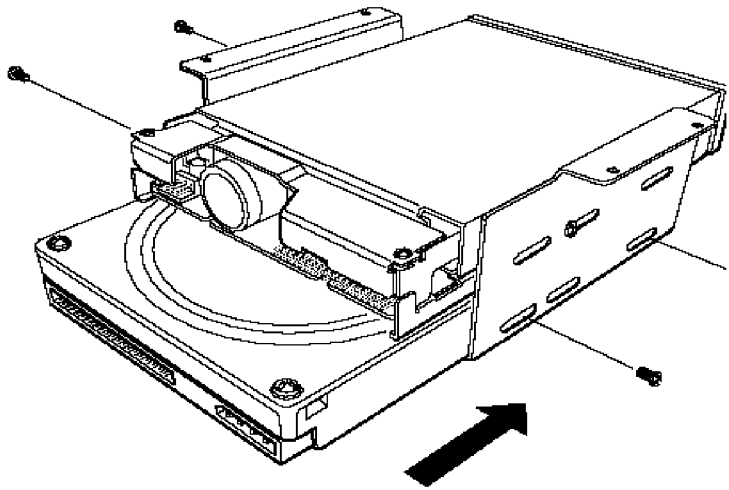


Installing the Hard Disk Drive

Follow these steps to install a hard disk drive in the mounting bracket:

1. With the drive components facing down, slide the drive into the bracket until the front of the drive is nearly flush with the edge of the bracket.

2. Align the holes in the drive with the oval-shaped holes in the bracket.



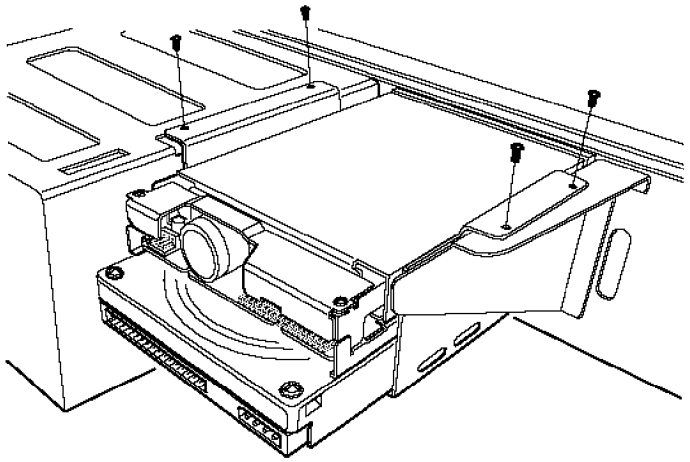
3. Secure the drive with two or four screws, depending on the location of the holes.

Replacing the Bracket in the Computer

Follow these steps to replace the bracket in your computer:

1. Lower the bracket into the mounting area and slide it forward, inserting the front of the diskette drive through the drive slot in the front panel of the computer.

2. Make sure the holes in the bracket are aligned with the holes in the drive bay and brace. Then secure the bracket with the screws you removed previously.



Connecting the Drive Cables

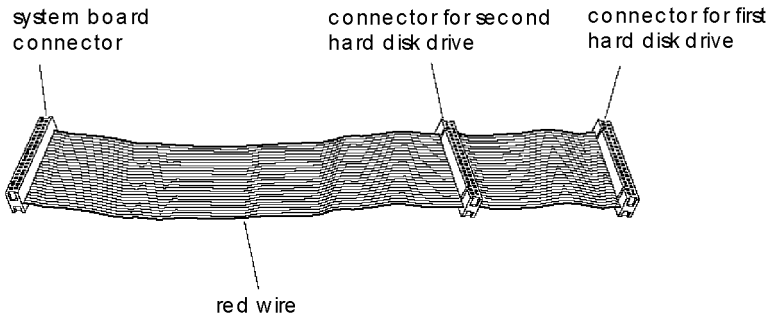
After you replace the bracket, you need to connect the cables for both the hard disk drive and the diskette drive. This section includes steps for the following procedures:

- ☐ Connecting the drive ribbon cable to the system board
- ☐ Connecting the cables to the hard disk drive(s)
- ☐ Reconnecting the cables to the diskette drive.

Connecting the drive cable to the system board

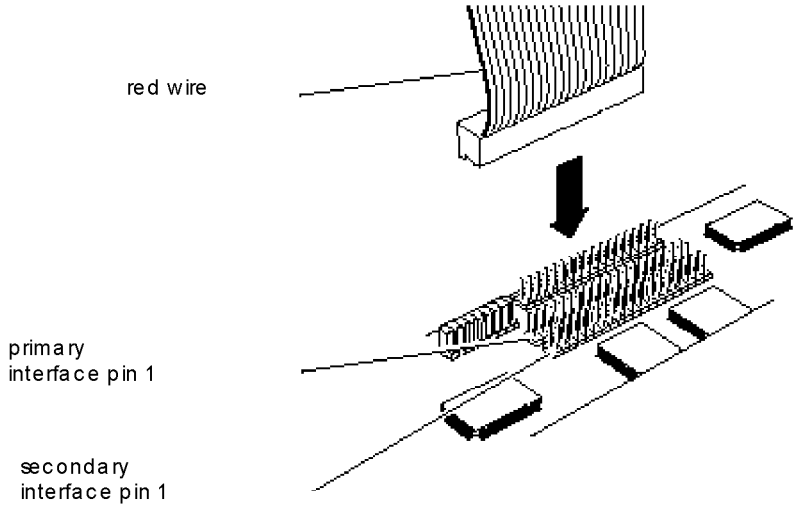
Follow the steps below to connect the hard drive ribbon cable to the system board, if it is not already connected.

1. Locate one of the hard disk drive ribbon cables that came with your computer; it is a flat cable with a connector on each end and an additional connector on the ribbon cable. All the connectors on this cable look the same.



2. Locate the hard disk drive interface that you want to use on the system board; see the illustration on page 4-6 to locate the interfaces. Use the primary interface for your boot drive and your second hard disk drive; use the secondary interface if you are installing your third and fourth drives.

3. Position the system board connector end of the cable so that the red wire faces the direction shown below and aligns with pin 1 on the interface.



4. Make sure the holes in the connector fit over the pins; then push in the connector.

> **Caution**
> If you do not correctly align the holes with the pins, you could severely damage your system board when you push in the connector.

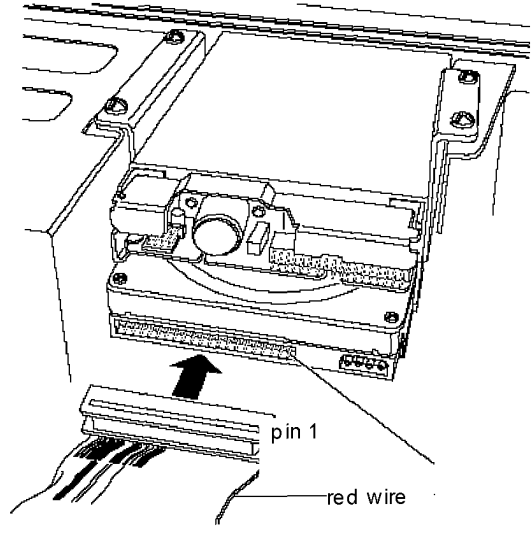
Connecting the ribbon and power cables to the drive

Follow these steps to connect the hard disk drive ribbon cable and a power supply cable to the drive:

1. Locate the hard disk drive connector on the end of the hard disk drive ribbon cable.

2. Locate pin 1 on the drive connector. If you do not see it on the connector casing and you did not locate it before you replaced the drive bracket, you may have to remove the drive and turn it over to check the circuit board. See page 5-14 for instructions on removing the drive and page 5-6 for instructions on locating pin 1 on the drive connector.

3. Position the connector on the cable so that the red wire aligns with pin 1 on the drive.

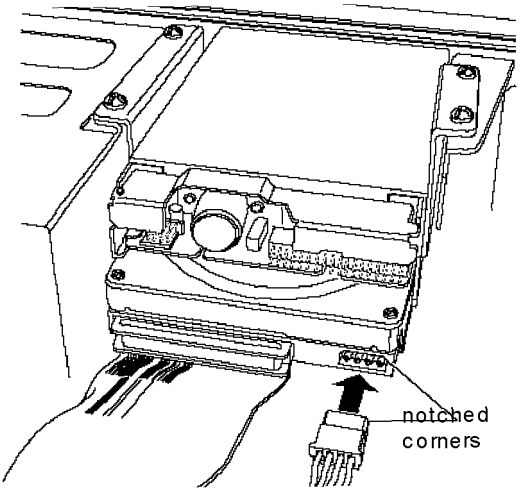


4. Make sure the holes in the cable connector fit over all the pins; then push in the connector.

> **Caution**
> If you do not correctly align the holes with the pins, you could severely dam age your hard disk drive when you push in the connector.

5. Locate one of the power supply cables that lead from the power supply. (They have multi-colored wires and a plastic connector on the end.)

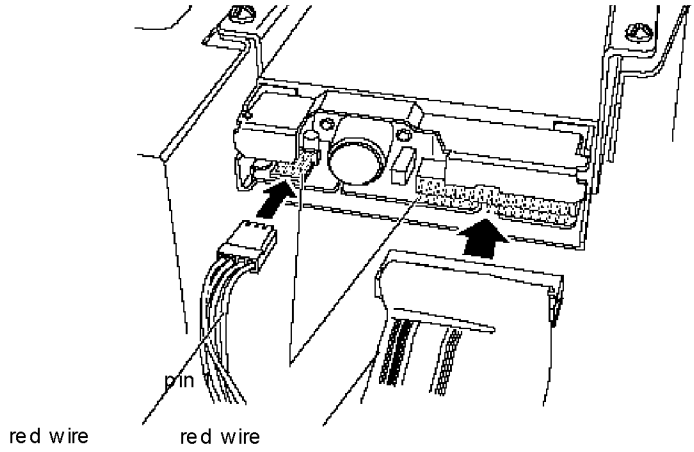
6. Position the power supply cable connector so that its notched corners line up with the notched corners of the power supply connector on the hard disk drive.



7. Make sure the holes fit over all the pins and then push in the connector.

Reconnecting the Cables to the Diskette Drive

Refer to the illustration below while you follow these steps:



1. Locate the connector on the diskette drive ribbon cable.

2. Identify pin 1 on the drive and align the connector so that the red wire is at pin 1. Push in the connector.

3. Locate the power supply cable with the small connector.

4. Position the power supply cable connector so that the holes fit over all the pins and the red wire aligns with pin 1 on the drive's connector. Then push in the connector.

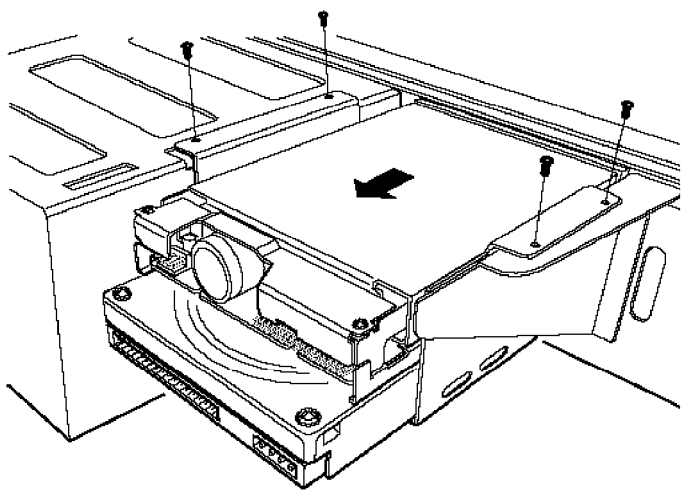
Removing a Hard Disk Drive From the Mounting Bracket

Follow these steps if you need to remove the hard disk drive from the bracket:

1. Disconnect the cables from the back of the hard disk drive and diskette drive in the bracket. Grasp the connectors and pull them straight out so you do not bend the pins; do not pull on the cables.

2. Remove the screws securing the bracket to the drive bay and brace.

3. Slide the bracket away from the front of the computer and lift it out.



4. Remove the screws securing the hard disk drive to the bracket and slide the drive out of the bracket.

5. Replace the bracket using the instructions on page 5-7.

Installing a Drive in an Extenal Drive Bay

Your system comes with two externally accessible drive bays. You can use these bays to install any of the following: diskette drive, hard disk drive, CD-ROM drive, tape drive, or optical drive.

If you are installing a diskette drive or a tape drive with a standard 5.25-inch diskette drive connector, you can connect it using the diskette drive cable that came with your system. If you are installing a hard disk drive or drive with a different type of connector, you may need to purchase a different cable.

If you are installing a hard disk drive, be sure its jumper(s) are set correctly for your configuration. A table of jumper settings for high-cap acity EPSON drives is included in Appendix A. If your drive is not listed or you need more information, see the documentation that came with your drive or contact the manufacturer.

Before you can install a drive in one of the external bays, you must remove the mounting bracket containing the diskette drive (and possibly a hard disk drive). See page 5-2 for instructions.

This section includes steps for the following procedures:

- ☐ Attaching mounting frames to the drive (if necessary)
- ☐ Installing the drive in the bay
- ☐ Connecting the drive cables

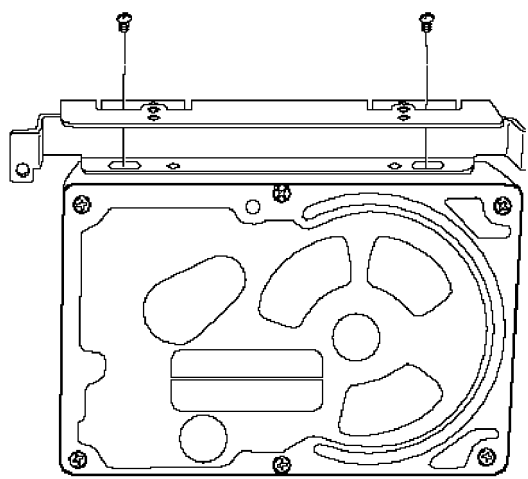
Attaching Mounting Frames to the Drive

If you are installing a 3½-inch wide drive, you need to attach mounting frames to it. If you are installing a drive that already has mounting frames on it, see if it also has a plastic guiderail and metal grounding plate attached to it. If so, follow step 1 on page 5-5 to remove the guiderail and grounding plate attached to it. Then go to "Installing the Drive" on page 5-17.

Follow these steps to attach mounting frames to a drive:

1. Locate the two mounting frames and four screws that came with the drive.

2. As shown below, place a mounting frame on one side of the drive and align it so that the oval holes in the frame are positioned over the holes in the drive. Then secure the mounting frame to the drive with the two screws.

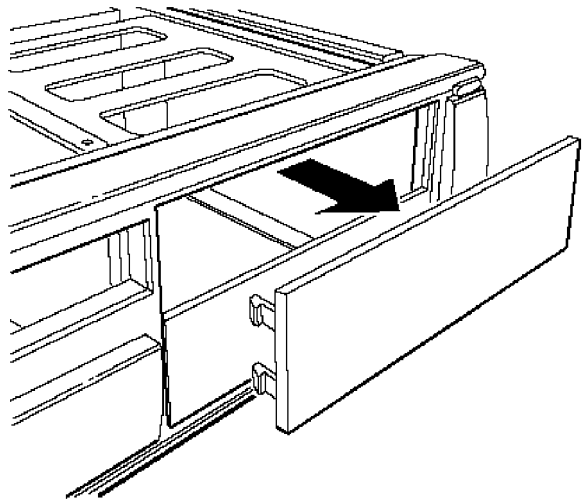


3. Repeat step 2 to attach a mounting frame to the other side of the drive.

Installing the Drive

Follow these steps to install a drive in the upper or lower external drive bay:

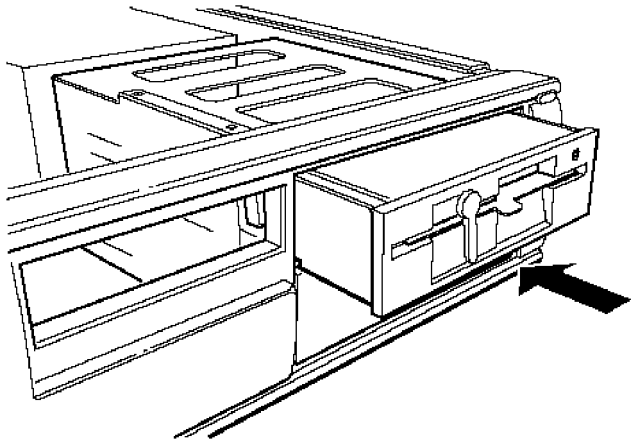
1. Remove the faceplate from the bay by pushing it out from the inside of the computer.



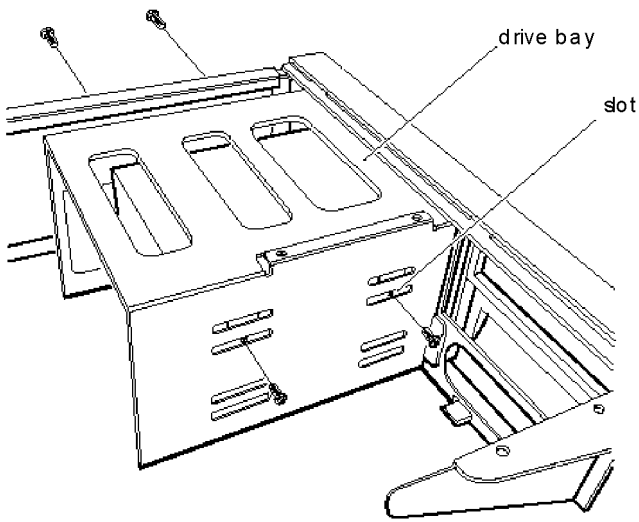
Keep the faceplate in a safe place in case you remove a drive later (or you are installing a hard disk drive).

2. If you are installing a drive in the lower external drive bay, also push out the metal plate covering the slot in the computer case. Then discard the plate; you do not need to reinstall it.

3. Slide the drive through the slot into the bay until it is flush with the front of the computer.



4. Align the slots at the side of the drive bay with the mounting holes in the drive or mounting frames. Then secure both sides of the drive to the bay using the retaining screws.



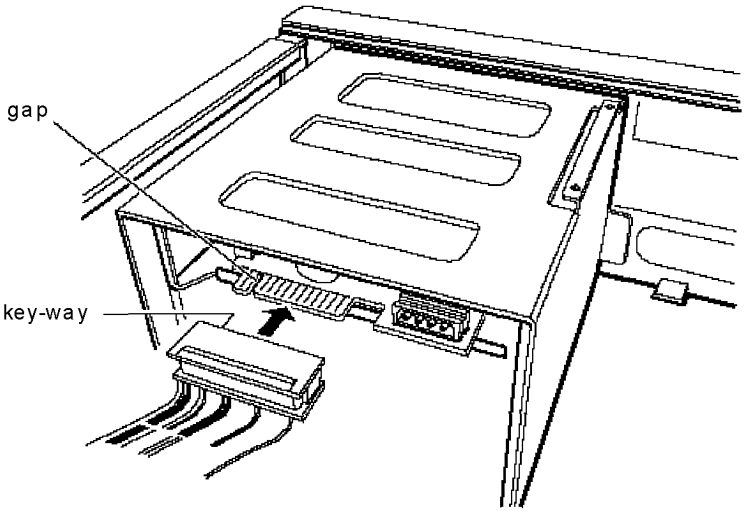
Connecting the Drive and Power Cables

If you are installing a diskette or tape drive, follow all the steps below. If you are installing a hard disk drive, follow the instructions on pages 5-9 through 5-12. Then go to step 5 below.

> **Note**
> If you have one hard disk drive installed in the bracket below the diskette drive and will install a second hard disk drive in the external bay on the same interface, you need to purchase a new hard disk drive cable that can reach both drives.

1. Locate the diskette drive ribbon cable; the connector in the middle is already connected to the system board.

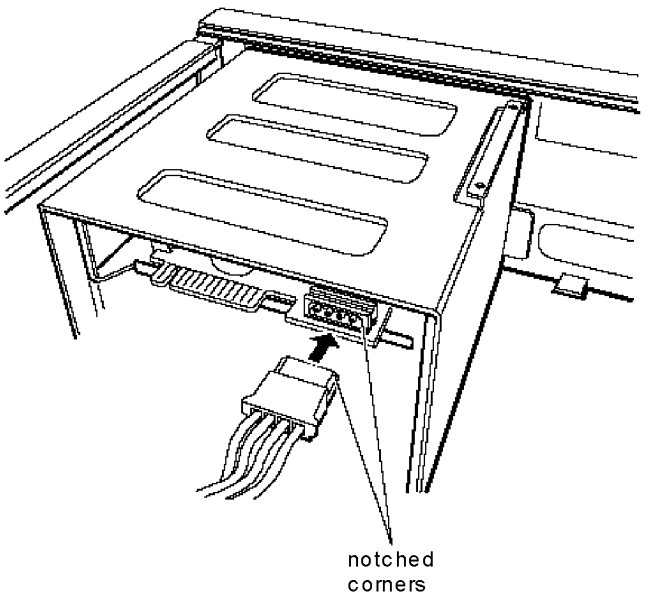
2. If you are installing a drive with a card-edge connector, make sure you align the key-way (the plastic divider) with the gap in the drive connector, as shown below.



If you are installing a 3.5-inch diskette drive with a header connector, see page 5-13 for instructions on connecting the cable.

3. Locate one of the power supply cables that lead from the power supply. (They have multi-colored wires and a plastic connector on the end.)

4. Align the notched corners of the power supply cable connector with the notched corners of the drive's power connector (such as the one shown below). Make sure the holes fit over all the pins and then push in the connector.



Caution
If you do not align the connectors correctly, you could severely damage your drive when you push them in.

5. If you installed a hard disk drive in one of the external bays, replace the faceplate. Insert one side of the plate, then gently press on the other side until it snaps into place.

After you have installed the drive in the external bay, you must replace the internal mounting bracket and reconnect the cables to the drives it contains. See page 5-7 for instructions.

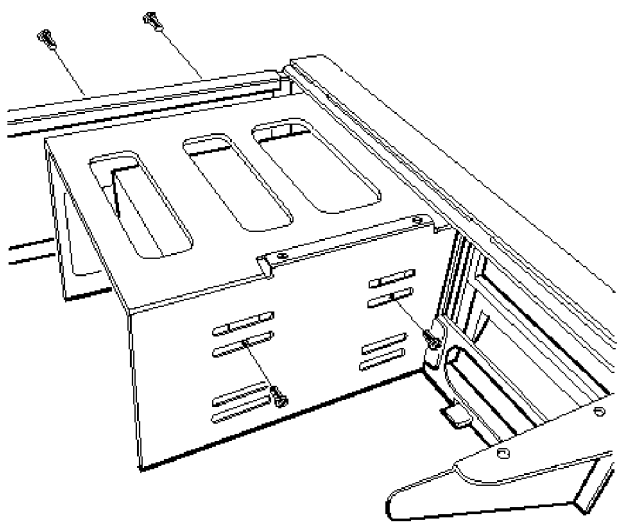
Removing a Drive from an External Bay

To remove a drive from an external drive bay, follow these steps:

1. Remove the drive mounting bracket. See page 5-2 for instructions.

2. Disconnect both the ribbon cable connector and the power cable connector from the drive you are removing from the external bay.

3. Remove the screws securing the drive on both sides.



4. Reach behind the drive and gently push it out through the front of the bay; then pull it out of the slot.

5. Once you have removed the drive, replace the faceplate by inserting one side of the plate, then gently pressing on the other side until it snaps into place.

6. Replace the drive mounting bracket and reconnect the cables. See page 5-7 for instructions.

Post-installation Procedures

After you install or remove your drive(s) and replace the cover on your computer, you need to run the SETUP program to define your new drive configuration. See Chapter 2 for instructions.

Chapter 6

Troubleshooting

If you have any problems as you setup and use your computer, refer to this chapter. You can correct most problems by adjusting a cable connection, repeating a software procedure, or resetting the computer.

The troubleshooting suggestions in this chapter are organized in general categories, such as "The computer will not start." Within each category, a more specific problem is described with possible solutions.

If the suggestions here do not solve the problem, contact your Authorized EPSON Servicer or the EPSON Connection. (See "Where to Get Help" in the Introduction of this manual for instructions.)

Identifying Your System

When you request technical assistance, be ready to provide the serial number of your computer, its system BIOS version number, its configuration (including the type of disk drives, monitor, and option cards), and the names and version numbers of any software programs you are using.

Use these guidelines to locate information about your system:

Serial number	Look on the back panel of the computer to find the serial number.
System BIOS version:	Restart your system. You '11 see the system BIOS version number displayed on the screen during power-on diagnostics.

System configuration:	Start SETUP and make a note of all your configuration option settings.
MS-DOS version:	At the MS-DOS prompt, type VER and press Enter.
Software versions:	In Windows applications, select About from the Help menu. As your software application starts, it usually displays a version number on the banner screen. Also, you can check your software manual.
CONFIG.SYS:	At the MS-DOS prompt, type TYPE C:\CONFIG.SYS and press Enter to see a listing of your CONFIG.SYS file, which contains system configuration commands.
AUTOEXEC.BAT:	At the MS-DOS prompt, type TYPE C:\AUTOEXEC.BAT and press Enter to see a listing of your AUTOEXEC.BAT file, which contains system startup commands.

The Computer Will Not Start

The power light is on, but the computer does not start.

Make sure the boot options in SETUP are set to access drive A, as described in Chapter 2. Then place a bootable diskette in drive A and turn on the computer again.

> **Caution**
> If you turn off the computer, always wait at least 20 seconds before turning it back on to prevent damage to its circuitry.

If your computer is set to boot from drive C, make sure that the IDE hard drive is formatted, and that the primary IDE controller is enabled in SETUP.

Also, your IDE driver may not be installed correctly. Start the system from a bootable diskette in drive A; then reinstall the IDE driver as described in Chapter 2. Also make sure the hard disk drive type is identified correctly in SETUP.

The computer does not start and the power light is not lit.

Make sure the power cord is securely connected to both the AC inlet on the back panel and an electrical outlet.

The power cord is securely connected, but the computer still does not statt.

Check the electrical outlet for power. Turn off your computer and unplug the power cord. Plug a lamp into the outlet and turn it on.

You installed or removed system component and now your computer does not statt.

Check to make sure you have reconnected all the internal and external cables correctly.

You may have installed a SIMM incorrectly. If the system doesn't detect memory, it won't start. Check that your SIMM(s) are securely installed in their sockets.

You may have installed option cards that exceed the system's power limits. Check the power limits listed in Appendix A.

The Computer Does Not Respond

The computer locks up.

Wait a few moments; if your computer does not respond after a reasonable length of time, press Ctrl Alt Del. If that doesn't work, press the RESET button.

You may have installed memory using SIMMs that work at the wrong speed. Install the correct SIMMs (see Chapter 4).

You reset the computer, but it still does not respond.

Try turning the computer off, wait 20 seconds, and turn it on again.

Your system suddenly stops operating.

You may have overloaded the power supply. See your option card manual(s) for the power requirements of your card(s). Then check Appendix A to see if they exceed the option slot power limits of your computer.

Keyboard Problems

The section displays a keyboard error message when you turn on or reset the computer.

Make sure the keyboard is securely connected to the keyboard port and not the mouse port. Although these ports look alike, they cannot be used interchangeably.

Nothing happens when you type on the keyboard.

The Lockout Timer may be set in SETUP. This option disables the keyboard for a specified period of time after the system returns to an active mode from a low-power standby mode. This delay gives Energy Star compliant monitors the time they need to return to an active mode. Wait a few seconds and try again.

If this is not the problem, see "The Computer Does Not Respond," above.

The cursor keys on the numeric keypad do not work properly.

If the Num Lock light in the upper right corner of the keyboard is lit, press **Num Lock to** turn off the function.

Mouse Problems

Your mouse isn't working properly or you see an a uxiliary device error message.

Make sure the mouse cable is securely connected to the MOUSE port and not the keyboard (K/B) port. Also make sure you installed the mouse driver correctly (if necessary). See the documentation that came with your mouse and Chapter 1 for instructions. (Windows automatically installs a mouse driver for Windows applications when you install the program.)

Monitor Problems

There is no display on the screen.

Check that the monitor's power switch is on and that its power light is on.

Also, the computer may be in low-power standby mode. When you press a mouse button or a key on the keyboard, see if the monitor displays an image.

The power light is on, but you still do not see anything on the screen.

Press a mouse button or a key on the keyboard to see if the monitor or computer is in low-power standby mode. Also, check the brightness and contrast controls.

If you still do not see anything on the screen, make sure the monitor is securely connected to the computer.

If you installed a display adapter card, make sure your monitor type matches the card type. Also be sure you set the correct display type in SETUP (see Chapter 2) and that the main system board jumpers are set correctly (see Chapter 4).

If you are running an application program, see if you need to set up the program for the type of monitor and display adapter you have. Also make sure you are using the appropriate monitor and display adapter for your software.

The power switch is on but the power light is not on.

If the monitor is Energy Star compliant, it may be in low-power standby mode. Press a mouse button or a key on the keyboard to activate the monitor.

Turn off the monitor's power, wait five seconds, and turn it back on.

If the light still does not come on, check the electrical outlet for power. Turn off your monitor and unplug it from the outlet. Then plug a lamp into the wall outlet and turn it on. If the light turns on, your monitor may be faulty.

Diskette Problems

You see a diskette error message.

Reinsert the diskette, making sure you insert it all the way. If the drive has a latch, turn it down to secure the diskette.

Also, check to see that you have inserted the right type of diskette in the drive. For example, make sure you are not inserting a high-density diskette in a double-density drive.

If reinserting the diskette does not solve the problem, insert the diskette in another diskette drive of the same type. If you can read the diskette in a different drive, your drive may be faulty.

The diskette is the right type, but you still see an error.

Check that the diskette is not write-protected, preventing the drive from writing to the diskette.

Make sure the diskette is formatted. See your operating system documentation for instructions on formatting diskettes.

The system may have the Diskette access option in SETUP enabled. If you entered a User level password when you started the system, but this option is set to a Supervisor level, you see an error when you access the drive.

You may have a defective diskette. Try copying the files from the bad diskette to a new diskette.

Something is wrong with the data in the files

If you are using MS-DOS, run CHKDSK to repair the files. You may also be able to use special utilities or diagnostics to solve this problem.

Diskette Drive Problems

A newly installed diskette drive is not working properly.

Make sure you have installed the drive correctly and check all the cable connections.

You see a diskette drive error when you start your computer.

Run the SETUP program and configure your system for the correct type of diskette drive. Also check the jumper setting of JP4 to make sure the diskette drive controller is enabled.

The diskette drive is making loud or unusual noises

Contact your Authorized EPSON Servicer or the EPSON Connection.

Hard Disk Drive Problems

A newly installed hard disk drive is not working properly or its performance is not what you expect.

Make sure you have installed the drive correctly and check all cable connections. Also, check the jumper settings on your drive.

Check that you have installed the IDE driver on your hard disk (see Chapter 2). To take advantage of the local bus IDE interface, your hard disk drive must support a 32-bit data path that uses double-word I/O. Also make sure your CONFIG.SYS file is loading the IDE driver when you start your system.

Some hard disk drives do not support the Energy Star features on your system. You may need to disable these features in SETUP.

You see a hard disk drive error when you start your system.

Run SETUP and check that your system is auto-sensing the correct drive type. If auto-sensing is enabled and SETUP displays information that does not match your drive, you may need to define your own drive type. See Chapter 2.

If you've loaded the IDE driver, edit your CONFIG.SYS file so that the command line for your IDE driver is after any memory or disk management utility commands. Save your changes, then restart your system.

Make sure the jumpers on the system board are set correctly. Jumpers JP10 and JP11 enable or disable the primary and secondary IDE hard disk drive controllers. See Chapter 4 for jumper information.

Make sure the jumpers on the hard disk drive are set correctly. See the documentation that came with the drive for more information.

You are unable to store data on the hard disk drive.

If the hard disk drive has been in low-power standby mode, make sure the drive has had time to achieve its full operating speed before you try to write data to it.

If your drive was not configured, make sure you have partitioned and form atted it correctly. See your operating system and hard disk drive manuals for instructions.

Also, make sure your hard disk drive has been physically formatted by the manufacturer. (All EPSON-supplied drives are physically formatted at the factory.) If it has not been physically formatted, use the format utility that came with the drive to format it before you partition it or install the operating system. (Note that a physical format is different from the action of software-based formatting commands, such as the MS-DOS FORMAT command.)

You have been using your hard disk drive successfully for some time but notice a reduction in performance.

The data on the disk may have become fragmented. Backup all your data and use a disk optimization utility to reorganize the files on your disk.

Check that your IDE driver is installed correctly (see Chapter 2). Make sure your CONFIG.SYS file has not been altered and that it loads the IDE driver.

If you cannot access data on your hard disk or you are seeing read/ write errors, the disk may have a physical problem. Contact your Authorized EPSON Servicer or the EPSON Connection.

Password Problems

You have forgotten your password.

You must discharge your CMOS memory. To do this, you need to change the setting of jumper JP23 to position 3-4. See Chapter 4 for details on changing the jumper setting.

After you have changed JP23, restart your system, leave it on for a few seconds, then turn it off again. This resets the SETUP values to their factory defaults. Both the Supervisor and the User passwords are disabled.

Set JP23 back to position 2-3. Then turn the computer on again. Use SETUP as described in Chapter 2 to set a new password, if you want one.

Software Problems

Windows won't start after you installed the IDE drivers

Reinstall the IDE drivers, making sure you load the driver for DOS as well as for Windows.

The application program does not statt.

Check that you are following the correct procedure for starting the program and that it is installed correctly. If you do not have a hard disk, make sure the correct diskette is in the diskette drive. If you need help, contact your software manufacturer.

The application program cannot read a key disk.

You may be running an application that requires a slower processor speed. Change the processor speed using a keyboard command, as described in Chapter 3.

The application program cannot read from or write to the hard disk drive.

If you have enabled the Fixed Disk Timeout option in SETUP, your application may be timing out during the few seconds when the hard disk drive returns to its full speed. Disable this option in SETUP as described in Chapter 2.

Your application has locked the computer, making it unresponsive to keyboard commands

Reset the computer and try again. If resetting the computer does not help, turn it off, wait 20 seconds, then turn it on again.

Some software, like OS/2,® UNIX,® or NetWare,® needs at least 8MB to 16MB of RAM to work correctly. Check your software documentation for the minimum memory requirements. If necessary, add more memory as described in Chapter 4.

Printer or Scanner Problems

The printer or scanner does not work at all.

Check that the printer or scanner has power and is properly connected to the computer. Also make sure your printer has paper in it. If you are using more than one serial port, check the primary and secondary port settings (COM1 and COM2) in your application program and in the SETUP program.

If you connected a scanner to the parallel port, make sure you set the port for bidirectional operation (EPP mode or ECP mode) by changing the setting of the LPT Extended Mode option in SETUP; see Chapter 2 for more information. If you use EPP or ECP mode, check your parallel device software documentation for the correct DMA channel (DRQ) setting; then set jumpers JP17 and JP18 to match the setting, if necessary.

The printer prints garbled information.

Check the printer manual for the printer's correct DIP switch or control panel settings. Also, make sure you have the proper drivers installed for your printer and make sure you've selected the correct printer within your software application.

Option Card Problems

A newly installed option card is not working correctly.

Make sure the option card is installed correctly and is well-seated in its slot. Run SETUP to update your configuration after you install the card and perform setup procedures for any software you are using with the card.

See the documentation that came with the option card to set any necessary DIP switches or jumpers on the card. The computer may also have some jumpers that must be set for the option card to work properly. See Chapter 4 for system jumper inform ation.

Make sure you install option cards that do not exceed the system's power supply limits; see Appendix A for more inform ation.

Your system may need to operate at the slower processor speed to access the device. Try reducing the processor speed, as described in Chapter 3.

Make sure the option card is not touching any other card or component on your main system board.

An external device connected to the option card is not working correctly.

Make sure you are using the proper cable to securely connect the device to the card.

Memory Module Problems

The memory count displayed by power-on diagnostics or the SETUP program is incorrect.

You may have installed the SIMMs incorrectly. They may be the wrong type or speed, or they may not be inserted all the way or in the correct sockets. See Chapter 4 for information on installing SIMMs.

If you have installed a gold-plated SIMM in the sockets, the socket may have corroded slightly. Remove the SIMM and clean the gold-plated connection with a pencil eraser; then reinstall the SIMM.

Controller Problems

You see a controller error for the drive controllers or the I/O port controllers when you start your system.

If the error message refers to your diskette drive or hard disk drive controllers, make sure the jumpers for these devices are set to enabled; see Chapter 4.

The indicated controller on your system board may be faulty. If you have an option card with a controller that will work with your device, you can install it and change the jumper settings on the system board to disable the built-in controller. You can then continue to use your system until it is convenient for you to have it serviced.

External Cache Problems

The amount of external cache displayed by the power-on diagnostics program is incorrect.

You may have installed the external cache chips incorrectly. They may be the wrong type, or they may not be inserted all the way. Also, make sure the tag chip you've installed has a 20ns access speed.

Also, you may not have changed the SETUP program or the jumpers to recognize the new cache. Make sure you have set the External cache and Video shadow options to Enabled. You can access these options from the Advanced System Setup screen.

See Chapter 4 for instructions on changing the jumper settings or for information on installing external cache; see Chapter 2 for instructions on using the SETUP program.

Appendix A

Specifications

CPU and Memory

64-bit CPU	Intel Pentium 60 or 66 MHz microprocessor
Green PC energy saver	Energy Star compliant, low -power, standby mode for the hard disk drive and video signals sent by the computer to the monitor; select time-out periods in SETUP; in a standard configuration of one hard disk drive and one diskette drive, system consumes less than 30 Watts in standby mode
System speed	Fast and slow processor speeds available; fast is the speed of the processor (60 or 66 MHz) and slow is 8 MHz; 0 wait state memory access at fast speed; speed selectable by keyboard command
Memory	8MB RAM standard on a SIMM; expandable to 128MB using lMB, 2MB, 4MB, 8MB, 16MB, and 32MB SIMMs; SIMMs must be tin-plated, 72-pin, 32-bit or 36-bit, fast-page mode type with access speed of 80ns or faster
ROM	128KB Phoenix® system BIOS, video BIOS, and SETUP code located in EPROM on main system board

Video RAM	1MB DRAM on main system board; expandable to 2MB using two 256KB x 16-bit video DRAM chips
Shadow RAM	Supports shadowing of system and video BIOS ROM into RAM; video shadowing selectable in SETUP program
Cache	16KB of internal cache in the Pentium microprocessor; includes 256KB of external cache on eight 28-pin, 32K x 8, 20ns SRAM DIP chips; expandable to 1MB by installing eight 28-pin, 128K x 8, 20ns SRAM DIP chips
Math coprocessor	Math coprocessor built into the Pentium microprocessor
Clock calendar	Real-time clock, calendar, and CMOS RAM socketed on main system board with integrated backup battery

Controllers

Video	Cirrus Logic® GD5428 high-speed, super VGA local bus controller provides resolutions up to 1280 x 1024 in 16 colors with 1MB of VRAM or up to 1280 x 1024 in 256 colors with 2MB of VRAM; True Color support in the 640 x 480 resolution
Diskette	Controller on main system board supports up to two diskette drives or one diskette drive and a tape drive

Hard disk	VESA two-channel, local bus IDE interfaces on main system board support up to four IDE hard disk drives (two on each channel); BIOS provides hard disk auto-sensing and enhanced IDE functions

Interfaces

Monitor	Energy Star compliant VGA interface for fixed or multi-frequency monitor built into system board; 15-pin, D-shell connector
Parallel	One standard, multimode parallel interface built into main system board; supports 8-bit unidirectional, 16-bit bidirectional, and EPP/ ECP (Enhanced Parallel Port/ Extended Cap ability Port) modes; 25-pin, D-shell connector; operation controllable by SETUP program and jumpers
Serial	Two high-speed RS-232C, programmable, asynchronous interfaces built into main system board; 9-pin, D-shell connectors
Keyboard	PS/2 compatible keyboard interface built into main system board; 6-pin, mini DIN connector
Mouse	PS/2 compatible mouse interface built into main system board; 6-pin mini DIN connector
Optional game port	Optional 10-pin game port interface on system board; can control joy-stick functions with the addition of a port connector

Option slots	Five 16-bit I/O expansion slots; ISA compatible, 8.33 MHz bus speed, two full-length and three half-length; both full-length slots are VESA compatible and run at half the bus speed of the CPU (30 or 33 MHz)
Speaker	Internal
Mass Storage	Internal mount: One 3½-inch wide, one-inch high drive Externally accessible mounts: One 3½-inch wide, one-inch high drive and two 5¼-inch wide, half-height drives
Diskette drive types	3.5-inch diskette drive, 720KB or 1.44MB storage capacity; 5.25-inch diskette drive, 360KB or 1.2MB storage capacity; or combination 3.5-inchl 5.25-inch diskette drive
Hard disk drive types	5¼-inch or 3½-inch form factor hard disk drive(s), up to half-height size; maximum of four drives
Other devices	Half-height tape drive, CD-ROM drive, optical drive, or other storage device; 5¼-inch, or 3½-inch with mounting frames
Keyboard	Detachable, two-position height; 101 or 102 sculpted keys; country-dependent main typewriter keyboard; numeric/ cursor control keypad; four-key cursor control keypad; 12 function keys

Mouse Detachable, two-button, PS/2 compatible

SETUP Program Stored in ROM; accessible by pressing Del during boot

System security User and Supervisor level passwords available for system boot or diskette access

Virus protection Write protection feature for the hard disk drive boot sector; periodic reminder message for running virus detection utility

Power Supply

Type 200 Watt, UL/TUV/CSA listed, fan-cooled

Input ranges 90-130 VAC or 180-270 VAC; switch-selectable

Maximum Output +5 VDC at 20 Amps, –5 VDC at 0.5 Amp
+12 VDC at 8 Amps, –12 VDC at 0.5 Amp

Frequency 47 to 63 Hz

Cables Two to main system board, five to mass storage devices

Option Slot Power Limits

Output voltage (VDC)	+5 Volts	–5 Volts	+12 Volts	–12 Volts
For all slots	12 Amps	0.4 Amp	4.0 Amps	0.4 Amp

Physical Characteristics

Width 16.9 inches (430 mm)

Depth 15.7 inches (400 mm)

Height 4.1 inches (105 mm)

Weight 17.6 lb (8 kg) with one diskette drive, without keyboard

Environmental Requirements

Condition	Operating range	Storage range
Temperature	32° to 122° F (0° to 50° C)	–4° to 140° F (–20° to 60° C)
Humidity (non-condensing)	8% to 80%	5% to 100%
Altitude	–330 to 9,900 ft (–100 to 3,000 m)	–330 to 39,600 ft (–100 to 12,000 m)

Options Available from EPSON

Many options for enhancing and supplementing this product are available from EPSON, including the following:

Monitors
Keyboards
Mass storage devices
Printers
Operating system software

Call your nearest marketing location for more information about specific options.

Tested Operating Environments

Although your system will run most software applications, the following operating environments have been tested for compatibility with your system.

Microsoft® MS-DOS® 3.3 and later
Novell® DOS®
Novell NetWare* 3.12 and 4.02
Novell Personal NetWare
IBM® OS/2
SCO® UNIX
SCO Open Desktop
Microsoft Windows 3.0 and later
Microsoft Windows for WorkGroups
Microsoft Windows NT

* Certified as workstation; tested as file server

Your system has also received Novell's "Yes, NetWare tested and approved" certification as a workstation. As new environments become available, these also will be tested.

System Memory Map

Address range	Function
FE0000h-FFFFFFh	128KB duplication of ROM BIOS stored at 0E0000h-0FFFFFh
100000h-FDFFFFh	System extended memory (128MB maximum)
0E0000h-0FFFFFh	128KB ROM BIOS
0C8000h-0DFFFFh	Adapter ROM BIOS
0C0000h-0C7FFFh	Video ROM BIOS
0A0000h-0BFFFFh	128KB video memory
000000h-09FFFFh	640KB base memory

Video Resolutions and Colors

Resolution	Memory requirements	Color	Refresh rates (Hz)	Remarks
640 × 480	1MB	256	60/72	8 bits/pixel
	1MB	32K/64K	60	16 bits/pixel
	1MB	16.8M (True Color)	60	24 bits/pixel
800 × 600	1MB	16	56/60/72	4 bit planes
	1MB	256	56/60/72	8 bits/pixel
	1MB	32K/64K	56	16 bits/pixel
1024 × 768	1MB	16	43.5/60/70/72	4 bit planes*
	1MB	256	43.5/60/70/72	8 bits/pixel*
	2MB	64K	43.5	16 bits/pixel**
1280 × 1024	1MB	16	43.5	4 bit planes*
	2MB	256	43.5	8 bits/pixel**

* Non-interlaced and interlaced

** Interlaced

EPSON monitor types

EPSON monitor	Horizontal Frequency (kHz)	Maximum refresh rates (Hz)			
		640 × 480	800 × 600	1024 × 768	1280 × 1024
14" VGA mono (A880611)	31.5	60			
14" .39 pitch VGA color (A881371)	35	60	56	43.5 (87 interlaced)	
14" .28 pitch VGA color (A881381)	35	60	56	43.5 (87 interlaced)	
14" .28 pitch VGA color (A881391)	48	60 75*	72 60 *	60	
15" .28 pitch VGA color (A880491)	60	72 75*	72 75 *	70 75*	
17" Professional Series (A804241)	75	72 75*	72 75*	60 75*	70*
20" Professional Series II (A804341)	82	60 75*	72 75*	75	75

***** These rates are calculate d, but not specified in the monitor's documentation

Hard Disk Drive Types

Hard disk drive types

Type	Size* (MB)	Cylinders	Heads	Sectors/ track	Landing zone	Write precomp	Drive name
1	85	903	4	46	903	0	CP30084E
2	121	762	8	39	762	0	CP30104H
3	106	1024	12	17	1024	0	ST3123A
4	65	940	8	17	615	300	
5	49	940	6	17	940	512	
6	170	903	8	46	903	0	CP30174E
7	171	332	16	63	332	0	CP30174
8	213	1024	12	34	1024	0	ST3243A
9	117	900	15	17	901	0	
10	341	768	14	62	768	0	ST3390A
11	528	1024	16	63	1024	0	ST3655A
12	52	855	7	17	855	0	
13	170	1010	6	55	1010	0	AC1170
14	255	1010	9	55	1010	0	AC2250
16	341	1010	12	55	1010	0	AC2340
17	212	989	12	35	989	0	AC1210
18	213	685	16	38	685	0	CFS210A
19	62	1024	7	17	1023	512	
20	31	733	5	17	732	300	
21	127	919	16	17	919	0	ELS127A
22	31	733	5	17	733	300	
23	170	1011	15	22	1011	0	ELS170A
24	245	723	13	51	723	0	LPS240A
25	252	895	10	55	895	0	CP30254
26	343	665	16	63	665	0	CP30344
27	540	1048	16	63	1048	0	CFA540A, AC2540
28	426	826	16	63	826	0	CFS420A
29	131	1002	8	32	1002	0	7131A
30	245	967	16	31	967	0	7245A
31	345	790	15	57	790	0	7345A

Hard disk drive types (continued)

Type	Size* (MB)	Cylinders	Heads	Sectors/ track	Landing zone	Write precomp	Drive name
32	42	809	6	17	809	128	
33	50	830	7	17	830	0	
34	72	830	10	17	830	0	
35	44	1024	5	17	1024	0	
36	71	1024	8	17	1024	0	
37	42	615	8	17	615	128	
38	109	1024	8	26	1024	0	
39	72	925	9	17	925	0	

* Actual formatted size may be slightly different than size on drive label; you cannot change this value.

Drive Option Information

Hard disk drive options for high-capacity, 1-inch IDE drives

Parameters	Conner®							Quantum®		Western Digital®		
	CP-30084E	CP-30104H	CP-30174E	CP-30254	CP-30344	CFS420A	CFA540A	ELS170AT	LPS240AT	AC1170	AC2250	AC2340
Formatted capacity (MB)	85	120	170	250	340	420	540	170	245	170	240	340
Size, width × height (in)	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	4 × 1	3.5 × 1	3.5 × 1	3.5 × 1
Weight (lb)	1.3	1.3	1.3	1.2	1.2	1.16	1.16	0.91	1.05	1.12	1.12	1.12
Cylinders	1806	1524	1806	1895	2116	2388	2805	1536	1818	2233	2233	2233
Disks	1	2	2	2	2	2	2	2	2	1	2	2
Heads	2	4	4	4	4	4	4	4	4	2	3	4
Sectors per track	46	39	46	62	63 - 95	63 - 100	72 - 114	54	44 - 87	56 - 96	56 - 96	56 - 96
Rotational speed (RPM)	3822	3399	3833	4542	4500	3600	4500	3663	4306	3322	3322	3322
Buffer size (KB)	32	32	32	64	64	32	256	32	256	64	64	128
Average seek time (ms)	17	<19	17	14	13	14	12	17	16	<13	<13	<13
Encoding method	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7
Power dissipation (seek)	3.75 W	3.9 W	3.75 W	3.75 W	3.75 W	5-12 W	5.7 W	4.0 W	4.9 W	5.2 W	5.2 W	5.2 W
Logical parameters												
Cylinders	903	762	903	895	655	826	1048	1011	723	1010	1010	1010
Heads	4	8	8	10	16	16	16	15	13	6	9	12
Precomp zone	0	0	0	0	0	0	0	none*	none*	1011	1011	1011
Landing zone	903	762	903	895	655	1048	1048	1011	723	1011	1011	1011
Sectors	46	39	46	55	63	63	63	22	51	55	55	55

* Select 1 or none for the precomp value. If neither of these options are available, select the maximum available precomp value.

IDEhard disk drive jumper settings

Model number	Single drive	Master drive	Slave drive
Conner CP30084E	C/D jumpered	C/D jumpered	No jumpers
Conner CP30104H	C/D jumpered	C/D, DSP jumpered	No jumpers
Conner CP30174E	C/D jumpered	C/D jumpered	No jumpers
Conner CP30254	C/D jumpered	C/D jumpered	No jumpers
Conner CP30344	C/D jumpered	C/D jumpered	No jumpers
Conner CFS420A	C/D jumpered	C/D jumpered	No jumpers
Conner CFA540A	C/D jumpered	C/D jumpered	No jumpers
Quantum ELS170AT	DS jumpered	DS, SP jumpered or DS jumpered	No jumpers
Quantum LPS240AT	DS jumpered*	SP and DS jumpered*	No jumpers
Western Digital AC1170	No jumpers	MA jumpered	SL jumpered
Western Digital AC2250	No jumpers	MA jumpered	SL jumpered
Western Digital AC2340	No jumpers	MA jumpered	SL jumpered

* CS (cable selection) can be jumpered for any configuration. When CS is used, the drive is a master if p in 28 is grounded, and a slave if p in 28 is not grounded.

DMA Assignments

Level	Assigned device
DMA0	Reserved (8-bit)
DMA1	Reserved (8-bit)
DMA2	FDD controller (8-bit)
DMA3	Reserved (8-bit)
DMA4	Cascade for DMA controller
DMA5	Reserved (16-bit)
DMA6	Reserved (16-bit)
DMA7	Reserved (16-bit)

Hardware Interrupts

IRQ no.	Function
IRQ0	Timer output 0
IRQ1	Keyboard
IRQ2	Cascade IRQ controller 2
IRQ3	Serial port 2
IRQ4	Serial port 1
IRQ5	Parallel port 2
IRQ6	FDD controller
IRQ7	Parallel port 1
IRQ8	Real-time clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 mouse
IRQ13	Math coprocessor
IRQ14	HDD controller
IRQ15	Reserved

System I/O Address Map

Hex address	Assigned device
000 - 01F	DMA controller 1, 8237
020 - 03F	Interrupt controller 1, 8259
022 - 024	FOREX 85C601A configuration register
040 - 05F	Timer, 8254
060 - 06F	Keyboard controller, 8242PE
070 - 07F	Real-time clock NMI (non-maskable interrupt)
080 - 09F	DMA page register, 74LS612
0A0 - 0BF	Interrupt controller 2, 8259
0C0 - 0DF	DMA controller 2, 8237
0F0	Clear math coprocessor
0F1	Reset math coprocessor

System I/O address map (continued)

Hex address	Assigned device
0F8 - 0FF	Math coprocessor
1F0 - 1F8	Primary hard disk interface
1E0 - 1E7	Secondary hard disk interface
200 - 207	Game I/O
278 - 27F	Parallel printer port 2
2B0 - 2DF	Alternate enhanced graphics adapter
2E1	GPIB (adapter 0)
2E2, 2E3	Data acquisition (adapter 0)
2F8 - 2FF	Serial port 2
300 - 31F	Prototype card
360 - 363	PC network (low address)
368 - 36B	PC network (high address)
378 - 37F	Parallel printer port 1
380 - 38F	SDLC, bisynchronous 1
390 - 393	Cluster
3A0 - 3AF	SDLC, bisynchronous 2
3B0 - 3BF	Monochrome display and printer port
3C0 - 3CF	Enhanced graphics adapter
3D0 - 3DF	Color graphics adapter
3F0 - 3F7	Diskette drive controller
3F8 - 3FF	Serial port 1
6E2, 6E3	Data acquisition (adapter 1)
790 - 793	Cluster (adapter 1)
AE2, AE3	Data acquisition (adapter 2)
B90, B93	Cluster (adapter 2)
EE2, EE3	Data acquisition (adapter 3)
1390 - 1393	Cluster (adapter 3)
22E1	GPIB (adapter 1)
2390 - 2393	Cluster (adapter 4)
42E1	GPIB (adapter 2)
63E1	GPIB (adapter 3)
82E1	GPIB (adapter 4)
A2E1	GPIB (adapter 5)

System I/O address map (continued)

Hex address	Assigned device
C2E1	GPIB (adapter 6)
E2E1	GPIB (adapter 7)

Connector Pin Assignments

Parallel port connector pin assignments (J6)

Pin	Signal	Pin	Signal	Pin	Signal
1	Strobe*	10	ACK*	19	Signal ground
2	Data 0	11	Busy	20	Signal ground
3	Data 1	12	PE	21	Signal ground
4	Data 2	13	Select	22	Signal ground
5	Data 3	14	AFD *	23	Signal ground
6	Data 4	15	Error *	24	Signal ground
7	Data 5	16	Init *	25	Signal ground
8	Data 6	17	Selectin *		
9	Data 7	18	Signal ground		

* Active LOW logic

Serial port connector pin assignments (J4 and J5)

Pin	Signal	Pin	Signal
1	Data carrier detect	6	Data set ready
2	Receive data	7	Request to send
3	Transmit data	8	Clear to send
4	Data terminal ready	9	Ring indicator
5	Ground		

Glossary

BIOS

Basic Input/ Output System. Routines in ROM (Read Only Memory) that handle the transfer of information in your operating system.

Cache

A high-speed memory buffer that stores frequently used data where your microprocessor can access it faster. Your computer includes 16KB of internal cache built into the microprocessor and 256KB of external cache on the main system board. The external cache can be expanded to lMB by installing additional cache SRAM chips.

CPU

Central Processing Unit. The primary device that interprets instructions, performs tasks, keeps track of stored data, and controls input and output operations. See also *Microprocessor.*

Device driver

A file containing instructions that allow your computer to recognize and communicate with a device. The device may be a printer, monitor, or other type of device.

EPP and ECP

Enhanced Parallel Port and Extended Cap abilities Port. The parallel port modes in your computer that

IDE

Integrated Drive Electronics. A type of hard disk drive interface in which the controller is on the drive instead of on a controller card.

ISA

Industry Standard Architecture. The 8-or 16-bit standard developed for IBM compatible computers.

Jumper

A small movable plug that connects two pins on a device's circuit board. Jumpers alter the operation of a particular function.

Local bus

An internal bus that controls the connections from the microprocessor to the VGA and IDE interfaces. Local bus provides increased perform ante and speed.

Memory module

A small circuit board, commonly called a SIMM (single inline memory module), that contains surface-mounted memory chips. You can add memory modules to the main system board to expand your computer's memory.

Microprocessor

A small CPU on one semiconductor chip. See also *CPU*.

Parallel

An interface that transmits data simultaneously over separate wires in a cable. See also *Serial.*

Pentium

A sophisticated CPU which incorporates the latest in Pentium technology, including a 64-bit data path, one 8KB internal cache for read-only code, a second 8KB internal cache for read-write data, and the ability to execute instructions in parallel.

Power-on diagnostics

Tests stored in ROM that the computer runs to check its intern al circuitry, peripheral device configuration, and operating status each time you turn it on or reset it.

RAM

Random Access Memory. The area of the computer's memory used to run programs and store data while you work. All data in RAM is erased when you turn off or reset the computer.

Real-time clock

A battery-powered clock inside the computer that tracks the time and date, even when the computer is turned off.

ROM

Read Only Memory. Memory that can only be read and cannot be modified. ROM retains its contents even when you turn off the computer by using power from a backup battery.

Serial

The type of communication that transmits data from a serial interface to a serial device over a single wire. See also *Parallel*.

Shadow RAM

The system's ability to copy the contents of the system, video, and external BIOS ROMs into RAM to speed up processing.

SIMM

See Memory module.

SVGA

Super VGA (Video Graphics Array). In addition to supporting standard VGA modes, your computer's built-in SVGA controller supports resolutions up to 1280 x 1024 in 16 colors with 2MB of video memory and a compatible monitor.

True Color

A VGA feature that supports 24-bits-per-pixel color, which enables your VGA interface to display 16.8 million colors. The screen image looks more like a photograph than a traditional computer image.

VESA

Video Electronic Standards Association. The standards set for common hardware and software interfaces; provides simplified software application access to the hardware.

VGA

Video Graphics Array. A high-resolution display adapter that provides a variety of video modes.

Write-protect

To protect the data on a diskette from being changed by setting the write-protect switch on a 3.5-inch diskette or by placing a write-protect tab over the notch on a 5.25-inch diskette. You cannot change data on a write-protected diskette.

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